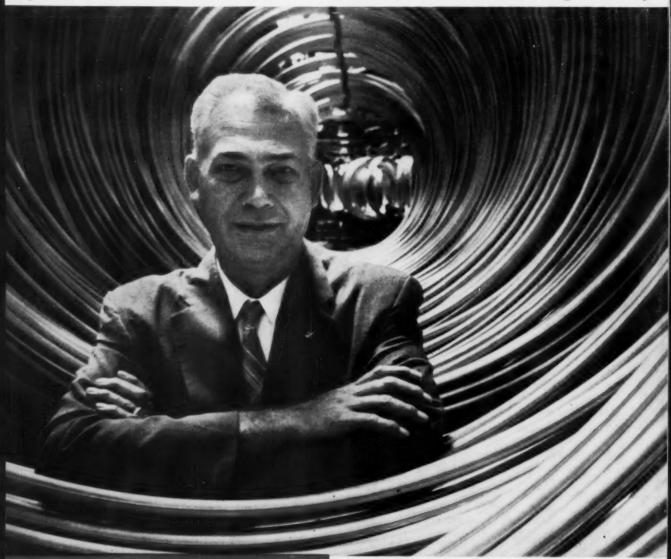
The IRON AGE

July 10, 1958

A Chilton Publication

The National Metalworking Weekly



D. W. Blend

How to Make
Committee Work
Pay Off P. 73

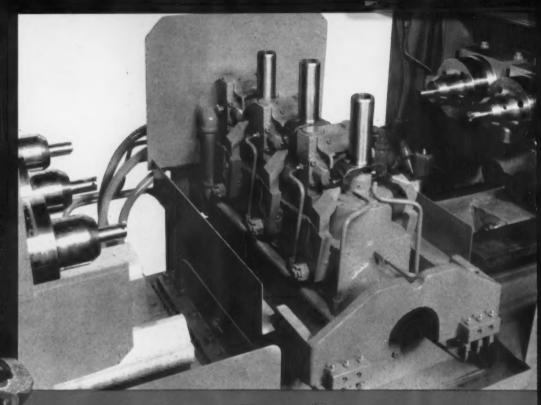
Red Machine Tools Invade World Markets – P. 61

Boost Profits With Advance Cost Planning – P. 99

Digest of the Week P. 2-3

RIGHT: Vertical splined arbors and clamps holding shoulders of bores are operated hydraulically.

BELOW: Universal yoke showing two holes bored simultaneously.



Two-Way Boring Speeds Parts Production

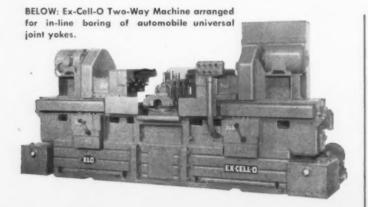
58-9

This Ex-Cell-O Precision Two-Way Boring Machine cuts production time of universal yokes for a manufacturer of automotive components by performing operations at both ends of a part—simultaneously.

Two independent machines interlocked electrically for central push-button control, the two-way unit bores two holes in line through malleable iron yokes held in a three station fixture. Both machine sections have three spindles on each slide for high production.

Two, three or four standard, self-contained way units can be easily arranged around a fixture at any angle the work requires. And like all Ex-Cell-O Precision Boring Machines, Way Machines are readily adaptable to different size workpieces—light, medium or heavy parts—and varying material requirements.

For complete information on versatile Ex-Cell-O Way Machines that can save time in your operation, contact your local Ex-Cell-O Representative, or write direct.





Machinery Division

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

A Truckload 4 of Potatoes





nce upon a time there was a Diligent Housewife.

She was paying & a pound for potatoes.

One day a farmer stopped by with a truckload of potatoes. "Lady," he said, "if you

buy the whole truckload, you can have 'em for 4¢ a pound."

Now, our Heroine had a nose for a Bargain. "I'll take them," she said, and wrote out a check for \$107.36.

"Dump them in the garage," she said.

She lived to regret her rashness. Her Hubby was fit to be tied. He couldn't get his car into the garage for 2½ years. What's

more, Diligent Housewife always had the dickens of a time digging out just the right size potato.

Besides, Hubby grumbled about how their money <u>could</u> be collecting interest at the Bank if it weren't tied up in potatoes.

Finally, Diligent Housewife

hung this Motto in her kitchen:





At the 1958 Annual Meeting of the A.S.W.A., this message won the Producer Award for the best single advertisement in the interest of America's steel service centers.

Many steel users long ago learned the same lesson.

When they need steel in small or moderate lots, they get it from their local steel warehouses, when they need it, and in the sizes they need. Always remember your "Service Center for Steel."

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem
Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



THE IRON AGE Chestnut and 56th Sts. Philadelphia 39, Pa., SH 8-2000

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The IRON AGE

July 10, 1958-Vol. 182, No. 2

Digest of the Week in

*Starred items are digested at right.

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Latest	Red	Move		

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NEWS ARTICLES

TOOLS FOR RUSSIA?

Has Embargo Boomeranged?—A British tool builder thinks our embargo on tools for Russia will hurt us in the long run. He says we have forced Reds to build a powerful machine tool industry in self-defense.

P. 61

BIG MISSILE SHOOT

Lesson for Industry—There's a lesson for industry in the Army's



big missile shoot at White Sands, N. M., last week. The potential is there, but you have to put your best foot forward if you want a piece of it.

P. 64

BUSINESS CONTROLS

May Be Revived—Worry about inflation because of future deficits may bring on demand for government price controls. Adoption is unlikely, with major businesses opposed.

P. 81

JET AIRLINES

Will Be Speed Demons - The

COMMITTEE MANAGEMENT:

D. W. Blend, vice president, general manager, Wolverine Tube Div., Calumet & Hecla, is a specialist on use of the management committee. He gives valuable tips on how to get the most out of management committees, how to avoid pitfalls. P. 73

Metalworking

600-mph, DC-8 jet transport, in service next year, is just a beginning. Its maker, Donald Douglas, predicts later commercial jets will travel at ten times its present speed. P. 83

TOOL MAINTENANCE

Preventive Plans Urged—A planned preventive maintenance program takes a lot of work to get started. But it will pay off in less downtime, lower labor costs. P. 85

FEATURE ARTICLES

COST PLANNING

Gives Extra Profits—A program in advance cost planning forms the basis of true profit potential. A manufacturer of circuit breakers puts planned cost into the profit analysis to show which is too costly—the manufacturing process or the basic design.

P. 99

COMMUTATOR ALLOY

Takes the Heat—Designed especially for use in small electric motors and alternators, a new zirconium-copper alloy can retain its strength at high temperatures. It's in answer to current military demand for materials that operate continuously at temperatures above the softening point of silverbearing copper.

P. 102

ABRASIVE BELTS

For Low-Cost Grinding—Whether a job calls for heavy stock removal or fine polishing, coated abrasive belts can be the answer to

cutting, grinding and finishing costs.

Belts and machines are relatively inexpensive.

P. 104

FLAME CUTTING

Torches Machine Forgings — Flame cutting can bring large forgings down to near-finished size. One job on forged rings which formerly took 320 hours is machined in less than 115 hours by using flame cutters.

P. 108

FORGING LINES

Use Low-Cost Conveyors—A job shop gets around its handling problems by building its own system from standard components. Angle iron and chain make up drag-type power conveyors and sheet metal chutes form gravity slots. P.110

MARKETS & PRICES

ALUMINUM IMPORTS

Battle Looms — There'll be no legislation on aluminum this session. But the issue is getting hotter as Senators dump the problem in the Administration's lap, ask for a basic change in policy P. 63

CONSTRUCTION EQUIPMENT

Takes Unexpected Upturn— Earth-moving equipment builders report June sales were higher than in May, contrary to usual seasonal pattern. Upturn began in March.

P. 65

GLASS IN AUTOS

More Coming — There are no signs that the trend to bigger windshields and windows is slowing down. Ford has built a new glass plant at Nashville. But automakers are divided on which glass is safest —laminated or tempered. P. 77

JULY LETDOWN

A Lean Month for Steel—It looks as though July will be another slew month for the steel industry. Metalworking vacations and reaction to the June bulge are being blamed.

P. 139

PURCHASING TIP

Don't Speculate — Buyers who gamble on future prices are skating on thin ice, says the PA for a major appliance maker. More stress should be put on inventories and maintaining quality.

P. 140

NEXT WEEK LONG-TERM PROFIT

It Takes Planning—C. W. Randle and A. W. Swinyard, of Booz-Allen & Hamilton, are authors of next week's special survey report on planning for profits. They will trace the profit margin patterns of several major metalworking groups.





"B&W Tubing helps me control costs...

I'm a front office man. Keeping costs in line is my main job.

I know that B&W Tubing helps us build our products more economically by saving time and materials,

minimizing rejects and fabricating problems."

Whatever your tubing job, B&W can save you money by tailoring physical and mechanical characteristics to suit your manufacturing methods exactly.

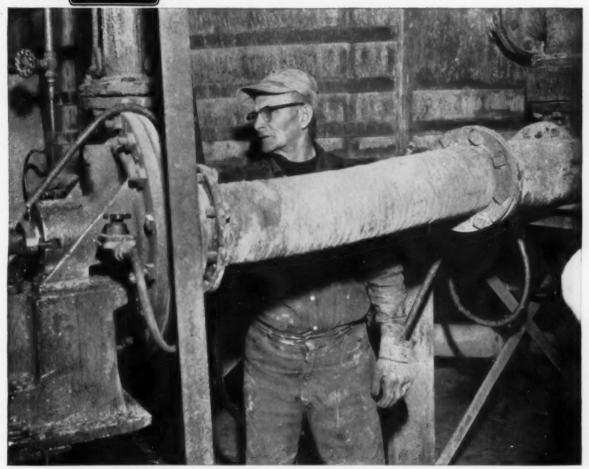
And B&W offers you a wide range of stainless, alloy and carbon steel tubing, in almost any size, shape or finish. What's more, delivery is fast, on schedule, in any quantity you need.

If you'd like to cut costs, and speed production, let B&W help you choose the best tubing for your special requirements. Get in touch with Mr. Tubes through your nearest B&W Representative or independent distributor. He maintains warehouse stock in principal cities. Or write for Bulletin TB-347. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.



Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges --in carbon, alloy and stainless steels and special metals.

B.F.Goodrich



Bang, rattle, shakepipes were cracking up

B. F. Goodrich improvements in rubber brought extra savings

Problem: That powerful pump at left draws hot acid at 400 gallons a minute from tanks, then shoots it through big pipes. The pump vibration shook the pipes until they clanged, rattled and shivered, gradually cracked, leaked, lost corrosive acid that damaged equipment. Pipes had to be replaced two or three times a year.

What was done: The plant superintendent, working with a B.F. Goodrich distributor, decided to replace a short

length of lead pipe between the tank and pump with a B.F.Goodrich Flexseal Connector. This is a special kind of hose, made of thick, resilient rubber, which is designed to absorb the pump vibrations traveling along pipelines.

Savings: At a cost of only \$105, this B.F. Goodrich hose saved the company \$1,000 in the first year by eliminating the harmful shaking that caused broken connections, frequent repairs, costly pipe replacements. Even greater savings

will be made because the sturdy, acidresisting hose is expected to last another
two years. A coil of round steel wire,
buried in the hose, keeps it from collapsing even under powerful suction.

Where to buy: Your B.F.Goodrich
distributor has exact specifications for
the B.F.Goodrich hose described here.
And, as a factory-trained specialist in
rubber products, he can answer your
questions about all the rubber products B.F.Goodrich makes for industry.
B.F.Goodrich Industrial Products Company, Dept. M-399, Akron 18, Obio.

B.F.Goodrich industrial products



Why do more stainless buyers call Ryerson?

There are four main reasons:

First, the nation's largest stocks of Allegheny stainless are always on hand at Ryerson—2351 types, shapes, sizes and finishes . . . tons of sheets, plates, bars, angles, pipe, tubing and fittings.

Second, Ryerson knows stainless. As the pioneer supplier of stain-

less from stock, Ryerson has worked with more stainless users, helped more firms to use the right type to the best advantage. This experience is always available to present and future users.

Third is the equipment for cutting stainless to your specifications. The most modern shears, saws, and flame-cutting machines produce accurate sizes and shapes, in any quantity.

And fourth is Ryerson's ability to deliver any requirement, any quantity—on time.

When you need stainless, or help on stainless problems—call your nearby Ryerson plant.



RYERSON STEEL

Member of the The Steel Family

Principal Products: Carbon, alloy and stainless steel,—tubing, bars, structurals, plates, sheets,—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK *BOSTON * WALLINGFORD, CONN. *PHILADELPHIA * CHARLOTTE * CINCINNATI * CLEVELAND

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Revulsion Compounded: Reaction to Latest Red Move

If there breathes a man or woman in our nation who still believes the Kremlin masters can be trusted, he is indeed naive—and that is being charitable. The Red regimes of Russia and China are the most brutal in history. We will be pathetic suckers if we give in when we should stand strong or believe when we should disbelieve.

That Khrushchev can smile, joke, or make sense to us should not hide the fact that he attempts to emerge as a new Stalin; and perhaps a more cunning and brutal one. This man, who hopes to liquidate those whom he fears, follows his great teacher Stalin who murdered at least 350 "friends" in the middle 30's.

The murder of Imre Nagy and three of his Hungarian supporters after a solemn (sic) oath had been given for safe conduct should awaken even the most dense American as to what kind of people we are trying to deal with. Many more murders will take place secretly as Khrushchev tightens his hold on the satellites.

That Russian people are friendly to us has nothing to do with the strongest and most brutal dictatorship in modern times. What the few million party members and their rulers at the top say, goes. If the citizen doesn't jump, he takes the "consequences." It is to the advantage of Khrushchev and Co. to foster the idea of cultural relationship with all its trappings. This gives the impression that things are "improving."

Even if Khrushchev should be overthrown, a new terror-ridden era would result until the next strong man is entrenched. Dictatorships in Russia and China rest upon brutal control and complete absence of freedom. A little freedom destroys people like Stalin and Khrushchev. No dictator can afford to allow any opposition to his regime—if he wants to continue as master.

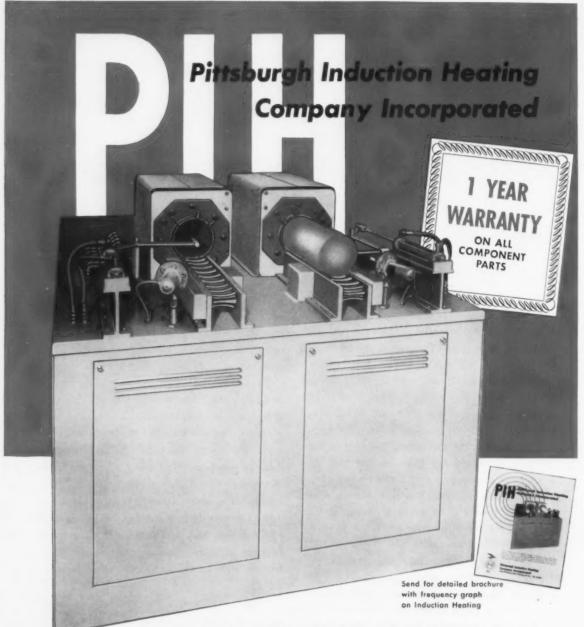
This is no argument for war. It is a plea to eliminate immature and unrealistic notions that because ordinary Russian people are good, friendly, and go to church, the world is saved for peace.

It will never be safe for peace as long as the dictatorships of Russia and China exist as they do today. It will never be safe unless we dedicate our time, money, and belief to a continuing military defense at home and abroad. It will never be safe for the free world if we and our allies are torn apart by cunning machinations of Communistic lies and propaganda.

Let's face this once and for all—or be lost.

Tom Campbell

Editor-in-Chief



ONLY PIH OFFERS A ONE-YEAR WARRANTY

You get the best when you buy a PIH induction heating furnace designed and pre-tested prior to delivery to meet your specific needs. PIH furnaces have a wide range of ferrous and non-ferrous applications, can cut your costs and operating time, increase profits. Consult a PIH Engineer, learn the advantages of induction heating for optimum heating of all metals for extrusion, forging, rolling, annealing and other purposes.



Pittsburgh Induction Heating Company Incorporated

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Inventory Runout

Sir—One of the many complex problems now under discussion in our steel plant is the over-abundance of low cost items in inventory. This situation highlights the fact that our mill needs a better inventory control system for these low cost items.

In that connection we were interested in your article (Feb. 20) "How to Avoid Inventory Runout." It mentioned a management consulting firm that has made studies in determining when to reduce inventory or cut runout costs. Also described were firms experimenting with formulae used to protect against the dangers of runout for items of low cost that are not ordered frequently. Firms experimenting with computers were also mentioned.

I would appreciate receiving the names of the firms mentioned in your article.— E. D. Greener, Steel Div., Production Programming Dept., Ford Motor Co., Dearborn, Mich.

We'd suggest that you contact Don C. Malcolm, Booz, Allen & Hamilton, 135 S. LaSalle St., Chicago, Ill. Mr. Malcolm is quite ex-

JAMA KRUTY

"And over there are the new loading platforms . . ."

pert in the field of inventory control and has done some very advanced work.

Ask him for a copy of "A Minimum Total Cost Approach to the Control of Distribution Inventories." In addition, an inventory runout control system is in operation at Line Material Co. in Milwaukee, and perhaps you will want to contact that firm.—Ed.

Adhesive Joining

Sir—I read an article in your May 15 issue dealing with adhesives for joining metals.

I am especially interested in the joining of metals to carbides. Would you send me the name and address of firms which sell such items. Thanks.—R. Essais, Puiseux, Durin

& Co., Clermont-Ferrand, France.

■ For information on adhesive joining to carbides we suggest you get in touch with Ciba, Ltd., Basle, Switzerland. They are European distributors for a number of U. S.-made adhesives for this purpose.— Ed.

Warehouse Words

Sir—Our compliments on your timely articles, "It Pays to Control Inventories," appearing in the June 12 issue, and "Warehouses Grow Despite Slump," appearing in the June 19 issue.

We have need for approximately 50 reprints of each of these two articles.—H. A. Green, Jr., Green Steel Co., Inc., Dayton, O.



There's a Satisfied Customer back of most orders for Diamond Perforated Metals

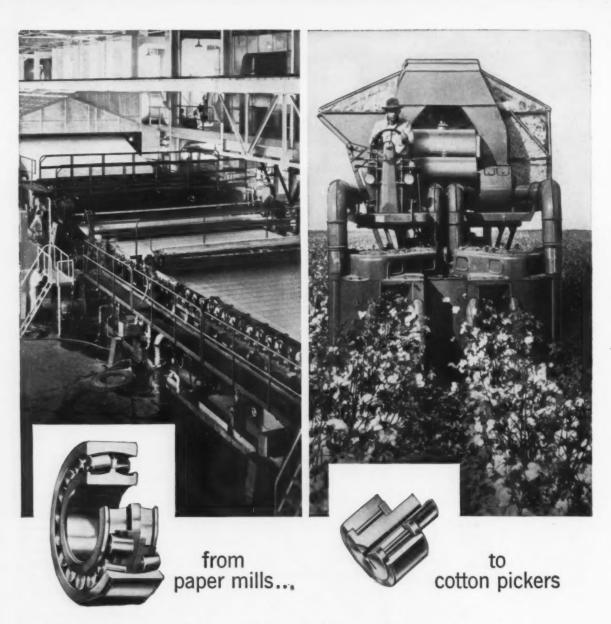
Naturally, we're always glad to make new friends and open up new accounts but, more and more as time goes on, the greater part of our business comes from concerns that have dealt with us before—some of them for nearly half a century.

One Reason is because they have learned that Diamond Perforated Metal Products are always reliable and our charges in line with competition of comparable quality. Another Reason is because our facilities are so complete, and our stock of dies so extensive, that almost any demand for perforated metal sheets, plates or parts can be taken care of promptly, accurately and economically.

ALL inquiries receive prompt attention. Illustrated catalogs give helpful working data—show many modern applications—enable you to select the best pattern for any purpose.

DIAMOND MANUFACTURING CO., WYOMING PENNA.

New Bulletin No. 47, Describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings.



Torrington makes the right anti-friction bearing for every basic need!

It may be self-aligning Spherical Roller Bearings in a paper machine producing record tonnages. Or compact, high-capacity Cam Follower Needle Bearings activating the intricate mechanical fingers that take the backbreaking work out of cotton picking.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

This wide range of experience enables you to rely on Torrington for engineering recommendations based on your specific application requirements. Your Torrington representative has valuable experience—rely on him for assistance. The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.

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FATIGUE CRACKS

Traffic Hazard

One of the correspondents on Alcoa's employee publication, the Forecast, knows how to keep readers in suspense.

In the paper's latest issue the young lady spins out the following dramatic story:

"No one remembers exactly who was at bat. It was one of the girls at the annual picnic. The ball was pitched. She swung. There was a tremendous crunch as . . . Well, no, it wasn't the bat hitting the ball. It sounded more like metal hitting metal . . . like one vehicle hitting another. As a matter of fact, it was. Someone's automobile had been hit."

We'll condense the rest of the tale a trifle. The girls dashed for the parking lot to see what had happened. They found an embarrassed policeman unhappily surveying a bashed-in auto.

He had good reason to be unhappy. His motorcycle had done the bashing. Cruising around looking for traffic violators he'd spent too much time watching the attractive softballers. Story doesn't say whether he gave himself a ticket.

Science to the Rescue

Electronics has come to the aid of insomnia sufferers. An electronic sleep inducer—which eliminates the need to take pills or drugs—has been put on the market by Gardiner Electronics Co., Phoenix, Ariz.

The Sleepatron produces the sound of falling rain—discovered through research as the best sleep-inducing sound. It's apparently tied in with our primitive instincts originating when the caveman was lulled to sleep this way.

The new device is also helpful in allowing those already asleep to stay that way deeper and longer. It shuts out the extraneous noises that tend to lighten sleep or wake a sleeper.



MEET JOE CLARK H.B.S.S.: Joe's an outstanding photographer whose work appears often in such magazines as Life, Look, and The Saturday Evening Post. For The IRON AGE he supplied the cover photograph illustrating our Special Report to Management (p. 73) on "How to Make Committee Work Pay Off." Joe started shutter snapping during boyhood days in the Cumberland Gap area of Tennessee. That origin accounts for the H.B.S.S. It's Joe's own title for himself, means Hill Billy Snap Shooter.



INSTALLATIONS PROVIDE PERMANENT CORROSION PROTECTION!

tanks

Pickling, plating, chemical processing and storage tanks of all kinds, utilizing corrosion-proof linings and cements, are designed and constructed by Atlas to completely resist all types of corrosives.

floors

Atlas industrial floors for chemical processing areas, pickling and plating rooms form a corrosionproof base against attack by alkalies, acids, solvents and salts.

hoods, ducts, fume systems

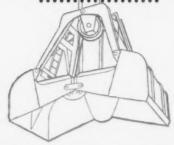
Rigid plastic structures, designed and fabricated by Atlas from polyvinyl chloride, exhaust all types of corrosive fumes. Plastic tanks and piping systems contain and convey corrosive solutions. All are completely corrosion-resistant throughout.

These Atlas installations will permanently protect your plant from corrosion. Write for Bulletin CC-3.



INDUSTRIAL BROWNHOIST OPEN TYPE COAL AND ORE GRAB BUCKETS CARRY BRIMMING PAYLOADS ...

EVERY BITE!



Built to the same rigid standards of quality as are all INDUSTRIAL BROWNHOIST machines, these opentype coal and open-type ore buckets are designed for perfect weight distribution, to increase the payload.

Simplified construction makes upkeep simple. Annealed steel castings, alloy steel shapes and plates assure a lifetime of powerful service. I-B open-type coal grab buckets range from 84 to 480 cu. ft. capacities; ore buckets from 120 to 275 cu. ft. . . . and in custom designs where necessary for special requirements.

For further information on I-B job-engineered buckets -open type grab, link type, flush link type and clamshell-write for your copy of new catalog 574, just off the press. It gives you complete specifications on all 1-B buckets and grapples, and contains many photographs of this money-making equipment at work.













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TION, BAY CITY, MICHIGAN - DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Montreal, Canada - AGENCIES: Detroit, Birmingham, Houston

CLAMSHELL BUCKET 250 TON WRECKING CRANE COAL-ORE BRIDGE

COMING EXHIBITS

Western Packaging & Materials Handling Show—Aug. 11-13, Civic Auditorium, San Francisco. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Chemical Show—Sept. 9-12, International Amphitheater, Chicago. (National Chemical Exposition, 86 E. Randolph St., Chicago 1.)

Western Tool Show—Sept. 29-Oct. 3, Shrine Exposition Hall, Los Angeles. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 S. LaSalle St., Chicago 4.)

Metals Show—Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastic Show — Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

JULY

Truck-Trailer Manufacturers Assn.
—Summer meeting, July 14-16,
Homestead, Hot Springs, Va. Society headquarters, 710 Albee Bldg.,
Washington 5, D. C.

The Material Handling Institute, Inc.—Joint industry fall meetings—Sept. 22-24, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, Suite 759, One Gateway Center, Pittsburgh 22.

SEPTEMBER

National Petroleum Assn.—Annual meeting, Sept. 10-12, Hotel Traymore, Atlantic City, N. J. Society headquarters, Munsey Bldg., Rm. 958, Washington, D. C.

Steel Founders' Society of America
—Fall meeting, Sept. 22-23, The
Homestead, Hot Springs, Va. Society headquarters, 606 Terminal
Tower, Cleveland 13.

(Continued on P. 16)



Other pieces with bores just like this one will find their way to the scrap pile, too... and many of those that don't will reach customers only to fail before their time — all because the gages that check them are providing only a half-truth. Nothing wrong with the gages themselves.

Trouble is, they are the wrong gages!

But it's been company policy that all bores should be checked with simple plug gages (which was all right before tolerances tightened). As a result, a critical out-of-round condition which is causing a poor fit between bore and shaft goes undetected, because these simple non-indicating gages con't show it. They were never designed to.

Only Indicating Gages can show conditions (out-of-round, taper, ovality, etc.) as well as size — in other words, give the whole truth. And although this company's management doesn't realize it, they are paying up right now for not having indicating gages. It won't be long before this policy blind spot eats into profits through customer dissatisfaction and lost sales.

Perhaps when the scrap figures reach the front office and the facts are sifted, management will decide to have a new look at its gaging policy. When it does, the job will be made easier ... much easier ... by calling in a Federal representative, a specialist who can show them, and you, where to get the most for your gaging dollar by having the right type of gage at the right spot. If you don't need an Indicating Gage, he'll say so. If you do, he can introduce you to the most complete and highly respected line of Indicating Gages available.

It costs nothing to invite him in . . . and most likely he can save you money. That's his specialty.

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Investigate







NEW WAY TO

Increase Production

Hold Close Tolerances

Eliminate Secondary Operations

Lower Material Costs

Increase Tensile Strength

Cut Scrap Loss

Here are some actual examples of production savings and improvements achieved by Waterbury Farrel Parts Formers.

PRODUCT: POWER ELEMENT CUP MATERIAL: DE-OXIDIZED

COPPER OLD METHOD

Formerly produced in two parts on Eye-let Machines from strip metal. Pro-duction ran about 55 parts a minute and scrap approx. 17 lbs. per 1000 completed pieces.

WEIGHT OF 1000 PIECES APPROX. 25 LBS.

NEW METHOD

sembly is elimi-nated, there is no scrap and production has gone up

PRODUCT: VALVE SEAT MATERIAL SAE 1018 STEEL

OLD METHOD

Using rectangular strip and progres-

high as 40%.

WEIGHT OF 1000 PIECES APPROX. 13 LBS.

NEW METHOD

reduced scrap to 14 lb. per 1000 pieces or approx. 98% savings, 85 valve seats are pro-

PRODUCT: SHADING COIL MATERIAL: COPPER

OLD METHOD

Produced on presses rectangular strip. Required tolerances meant 100% tran-ming, Approx. 8 lbs. of scrap was also produced in 1000

WEIGHT OF 1000 PIECES APPROX. 10 LBS

NEW METHOD

Scrap was reduced to 1½ ibs. per 1000 pieces. A savings in raw material was also effected by the use of round wire.
The PARTS FORMER is producing 125

PRODUCT: 5/16" TUBE NUT

OLD METHOD

Produced on screw machines from hexagon bar stock. Scrap amounted to approx.

28 lbs. per 1000
pieces. Was also made on a Crank
Eyelet type machine at a speed of
50 nuts a minute, with scrap

WEIGHT OF 1000 PIECES APPROX 18 LBS

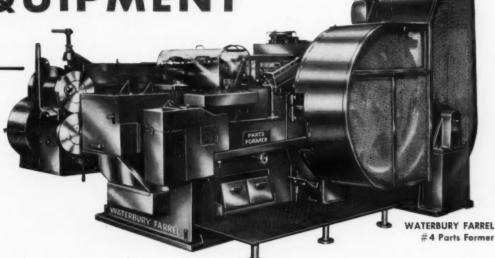
NEW METHOD

Using round wire, the PARTS FORMER is producing 100 nuts per minute.
Scrap is reduced to 3 lbs. per 1000 pieces. A savings of approx. 90%

in raw material.

PARTS FORMING

WATERBURY FARREL COLD HEADING **EQUIPMENT**



Move metal into the shape you want instead of removing it. That's the basic concept and advantage of Waterbury Farrel parts-forming equipment.

At the upper left are a few examples of the tremendous variety of parts which can be formed from round wire by the Parts Former or by related Waterbury Farrel cold heading equipment. These machines have already been thoroughly proven in production. In fact, many metalworking plants are now deriving the benefit of better, lower cost parts production by Waterbury Farrel machines.

As the pioneer in cold forming, Waterbury Farrel knows what this process can do for you. Our engineering staff will be glad to investigate with you the possibilities of cold forming your product. Contact our nearest office or bring your samples and specifications directly to our plant.

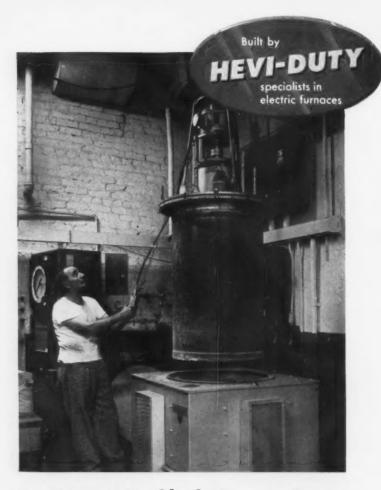
Other Waterbury Farrel Cold Heading and Auxiliary Equipment Includes Two Blow and Progressive Headers, also Custom Designed Cold Heading Equipment • Nut Machines • Pointers • Slotters • Thread Rollers and Trimmers.

THE WATERBURY FARREL FOUNDRY & MACHINE CO.

Waterbury, Connecticut Chicago . Cleveland . Los Angeles . Millburn, N. J.



Use Our Experience To Your Advantage



Two Retorts Double the Furnace Output at Cannon Electric Company

Cannon Electric Company, Los Angeles, age hardens as many as 150,000 beryllium copper springs in a single retort load, while a second retort slow cools with the springs protected by a special atmosphere. This produces bright, scale-free parts, yet permits constant use of the furnace. The Company chose a Hevi-Duty "Versa-Duty" pit furnace to do this double duty for several reasons:

They like its excellent uniformity. Temperature variations are held within plus or minus 10° F. despite the dense load. They like the fact that the fan is installed in the cover for easy servicing. They also appreciate its low maintenance. It has required nothing but normal lubrication since it was installed.

For more information on "Versa-Duty" pit furnaces, write for Bulletin 755.

- Heat Processing Furnaces
- Dry Type Transformers
- Constant Current Regulators



EXHIBITS, MEETINGS

(Continued from P. 13)

Air Moving & Conditioning Assn., Inc.—Annual meeting, Sept. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 2159 Guardian Bldg., Detroit 26.

Porcelain Enamel Institute — Annual meeting, Sept. 25-27, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1145 19th St., N. W., Washington, D. C.

The Electrochemical Society, Inc.— Semi-annual meeting, Sept. 28-30 and Oct. 1-2, Chateau Laurier, Ottawa, Canada. Society headquarters, 1860 Broadway, N. Y.

Pressed Metal Institute — Annual meeting, Sept. 28-Oct. 2, The Cloisters, Sea Island, Ga. Society headquarters, 3673 Lee Rd., Cleveland 20.

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington, D. C.

Gray Iron Founders' Society, Inc.
—National annual meeting, Oct.
8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930
National City-E 6th Bldg., Cleveland.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society head-quarters, 543 Main St., Stamford, Conn.

American Machine Tool Distributors' Assn—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

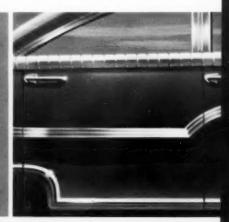
Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society head-quarters, 38 S. Dearborn St., Chicago.

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as bandsome does"...

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stainless provides solid protection for easily-marred decorative panels

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stainless brightens the entire car for life!



Superior Stainless Strip Stee

Superior Steel

CARNEGIE, PENNSYLVANIA

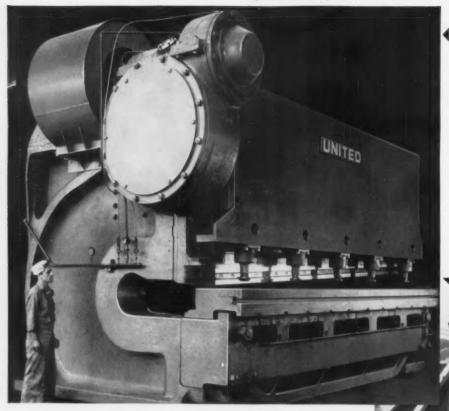


Fig. 1—United's 630,000 psi Cone-Drive geared shear is more compact and streamlined and has a higher capacity than the spur-gear driven shear. Cone-Drive gears are enclosed in compact housing in foreground.

Fig. 2—An older model of a similar shear shows the bulky conventional spur gear drive at the top of the machine.

WORM GEARED SHEAR CUTS 1 % STEEL PLATE UP TO 13' WIDE

An idea of what double-enveloping worm gearing can contribute to steel mill equipment is told, in part, by the accompanying photographs. Fig. 1 shows a United Engineering and Foundry Company 630,000 lb. shear operated through Cone-Drive gearing. Fig. 2 shows an older similar shear—but actually of smaller capacity—driven through conventional spur gearing.

In addition to the reduced bulk and improved appearance of the newer shear, the following advantages have been obtained —largely by designing the shear around compact Cone-Drive gearing:

- 1. Capacity increased from 1" thick steel plate, 86" wide, to 1%" thick and 156" wide.
- 2. Drive is enclosed and compact instead of cumbersome and sprawling.
- Flywheel clutch unit and motor mounted to give more effective machine operation.
- 4. Service difficulties have been eliminated. Only an occasional check on lubricant is now required.
- 5. Much quieter and smoother operation.

The United shear develops up to 630,000 psi between the knives. Drive is from a 75 hp, 1000 rpm electric motor through a set of Cone-Drive gears with a ratio of 36.5 to 1.

This gearing is enclosed in the housing at the upper left corner of the machine in Fig. 1. The compactness of the gearing, making its complete enclosure simple, has contributed considerably to eliminating maintenance difficulties. According to one steel mill: "If we didn't have to check lubricant occasionally, we wouldn't know there were any gears in the case."

Reason for the compactness and freedom from trouble of the Cone-Drive gearing is that these worm gears—differing from others—are "double-enveloping" as a result of a special gear cutting process. In double-enveloping worm gears there are more teeth in contact and more contact per individual tooth. This results in a very high load carrying capacity required for steel mill equipment. It furnishes the positive action of a gear drive with the smoothness of a hydraulic drive.

Complete elimination of backlash is also possible with even the largest Cone-Drive gear sets. Compactness, high load capacity and light weight of these gears permit the use of much smaller gears and housings.

For further information on Cone-Drive worm geared speed reducers and gear sets, write Cone-Drive Gears, Div. Michigan Tool Company, 7171 E. McNichols Road, Detroit 12, Michigan, 45"x 115" SLABBING MILL



ENGINEERING AND FOUNDRY COMPANY PITTSBURGH, PENNSYLVANIA

UNITED

Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington.

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Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nod-lar Iron and Steel Castings and Weldments.

ACP ALODINE* — its properties and functions in protecting aluminum alloys and bonding paint to them

By ALFRED DOUTY, Technical Director, Amchem Products, Inc.

Aluminum protects itself against corrosion by a coating of its own oxide. This adds weight, but does not provide complete protection. Even commercially pure aluminum in clean air at ordinary room temperature oxidizes indefinitely.

The use of adherent inorganic protective coatings on aluminum has long been recognized as efficacious in reducing corrosion rate and prolonging paint life. Since aluminum oxide tends to be protective, it is natural that the most intensive early efforts in this direction should have involved processes for improving the properties of the naturally occurring oxide coating. Anodizing, or electrochemical oxidation, although it is one of the most effective of such methods, is rather costly and time consuming.

Early in 1945 a new chemical process was devised for producing an amorphous phosphate coating on aluminum. Its simplicity, speed and economy and the unique properties of the coating have resulted in wide commercial acceptance. It is called the Alodine Process.

Some idea of the effectiveness of the Alodine coating on unpainted 3S Grade aluminum may be had from Fig. 1. All panels were removed from the salt spray cabinet after 300 hr. except the Alodized and anodized panels, which were continued to 800 hr.

Organic protective and decorative coatings, such as paint, likewise require a

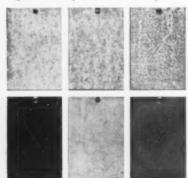


Fig. 1. Salt spray test comparison of Aladine with other surface treatments on unpainted aluminum. (Left to right, top row) solvent wiped ---300 hr.; alkali cleaned--300 hr.; phosphate coated—300 hr.; Bottom row) chemically oxidized—300 hr.; anodically oxidized—800 hr.; Alodized—800 hr.

corrosion-retarding undercoating of the kind produced by Alodine to achieve their maximum life and adhesion.

The effect of the Alodine coating in retarding underpaint corrosion is shown in Fig. 2. The Alodized panel was given a top coat only. All other panels in the series were primed after the surface treatments with a regular automotive product, baked, given a surface coat dry-scuffed with sandpaper as per standard automotive practice, and then finished with a regular black baked top coat. The panels were removed from the salt spray after failure of the paint film had set in.

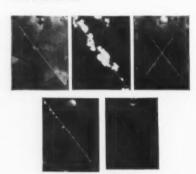


Fig. 2. Salt spray test comparison of Alodine with other surface treatments in retarding underpaint corrosion. (Left to right, top row) alkali cleaned and phosphoric acid dipped— 300 hr.; phosphoric acid, solvent cleaned— 300 hr.; zinc phosphate coated-400 hr. (Bottom row) anodically oxidized-3000 hr.; Alodized-3000 hr.

COATING CHARACTERISTICS

The coating produced by this new process is an amorphous metallic phosphate, dense, rather hard, and apparently nonporous. Unlike most oxide films, it is nonabsorptive and cannot be dyed or stained. Sealing in hot water or salts has no apparent effect. It differs markedly in appearance from previously known phosphate coatings, as shown in Fig. 3.

Electrical Resistance. Very little information is available at the present time on the electrical properties of the coating, but it is known that resistance increases





Fig. 3. (Left) conventional phosphate coating on aluminum; (right) Aladine coating produced in 3-min. immersion, rinsed and air dried. Magnification 500 diam.

very rapidly with thickness and as a result coatings normally produced offer extremely high resistance.

Weight and thickness. Generally speaking. the weight of the amorphous phosphate coating increases with processing time, bath strength, and bath temperature. It is interesting to note that the increase becomes less and less pronounced as the temperature increases and actually reverses itself into a sharp decline between 130 and 140°F.

Adhesion. The original purpose in development of this process was to improve adhesion of the paint to aluminum surfaces and thus lengthen their overall life. Only later was it discovered that the film itself provides corrosion re-

Resistance to Bimetallic Corrosion. Since it has very high surface resistance, the coating, as would be expected, offers good resistance to bimetallic or galvanic corrosion. Test samples are available to illustrate the insulating effects.

We present here a general and by no means complete, report on ACP Alodine—its prop-erties and uses in protecting aluminum alloys. Your ACP sales representative can give you a much fuller story. Or write us at Ambler.

*Alodine is a registered trademark of American Chemical Paint Co.

+Since the introduction of Alodine amorphous phosphate coatings, ACP has developed a complete line of Alodine amorphous chromate coatings for superior corrosion

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THE IRON AGE, July 10, 1958



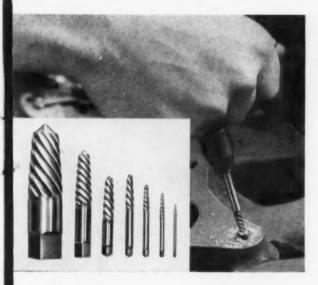


Used for Interior Parts of Fram Air Cleaners... REPUBLIC TERNE PLATE ASSURES FILTER-FRESH AIR SUPPLY

Efficient removal of airborne dust is the primary function of carburetor air cleaners manufactured by the Fram Corporation, Birmingham, Alabama. And, to make sure the cleaned air stays clean as it enters the carburetor, Fram uses Republic Terne Plate for vital interior parts. The tight, uniform, lead-tin coating on this material guards against formation of rust particles which might enter and block fine carburetor jets. As a result, a potential source of trouble in the carburetor system is eliminated.

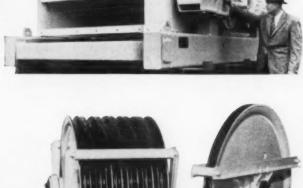
Equally important, from Fram's standpoint, is the excellent workability of Republic Terne Plate. The parts for which it is used – inner primary plate, center tube, carburetor tube, and cover plate -require severe fabricating operations. The $2\frac{1}{4}$ " diameter, $2\frac{1}{4}$ " deep center tube, for example, is drawn from a $6\frac{1}{4}$ " circular flat blank. The cover plate is "hemmed" around the perimeter to produce a double thickness. Republic Terne Plate withstands these and other punishing operations with no cracking or flaking of the coating or loss of its ability to fight corrosion. In addition, the coating requires no preparation to provide an excellent base for painting.

It will pay you to consider all of the advantages of Republic Terne Plate in relation to your own sheet steel product service and manufacturing requirements. For complete information, contact your nearest Republic office, or send coupon.



QUALITY AND ECONOMY ARE ASSURED in screw extractors made of Republic Cold Drawn Leaded Alloy Steel by the Henry L. Hanson Company, Worcester, Massachusetts. Beneficial characteristics of this versatile material include high machinability, formability, hardenability, and toughness. As a result, screw extractors can be produced faster and at less cost than was possible with former materials and, after scientific heat treatment, are practically unbreakable. Republic Cold Finished Alloy Steels are available in every standard analysis, plus many specials. Mail coupon for further information.

FINE-THREAD REPUBLIC CAP SCREWS of several different steel analyses are used for assembly of major components in Ty-Rock Vibrating Screens, built by the W. S. Tyler Co., Cleveland, Ohio. Use of these fasteners enables Tyler to distribute loads better and eliminate danger of fatigue failure due to vibration and cyclic loading. Republic produces more than 20,000 standard and 8,000 special types and sizes of fastener products to meet a wide variety of production and product requirements. Send coupon for details.



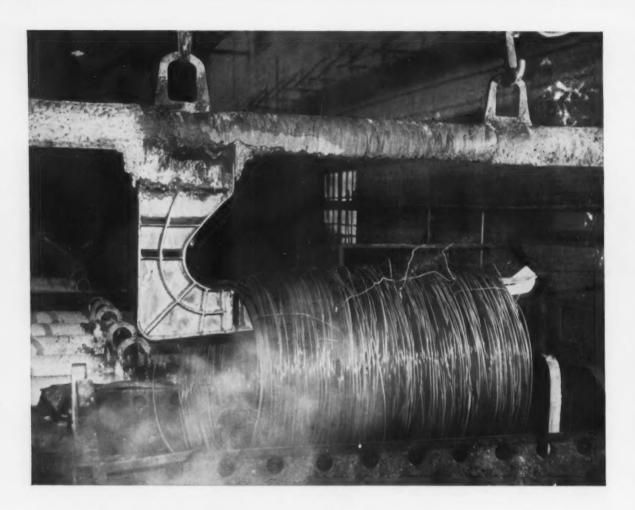
ASSURANCE OF STRENGTH WITHOUT EXCESS WEIGHT is a mojor reason why the Lee C. Moore Corporation, Tulsa, Oklahoma, uses Republic 4150 Hot Rolled Alloy Steel for shofting in cantilever mast crown blocks. Shofting must be able to absorb shocks and impact without failure while carrying massive weights of drill pipe. Location of the crown block in the top of the rig makes light weight vital. And yet operating safety is of parameunt importance. Republic Alloy Steel meets all of these requirements and provides high abrasion and fatigue resistance as well. Republic Alloy Steels provide strength, safety, and economy in thousands of product applications throughout industry. For complete data, mail coupon.

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Monel Pickling Hooks give improved service life at Colorado Fuel and Iron

Pickling hooks were a major problem for the Colorado Fuel and Iron Corporation. They corroded too fast.

So Colorado decided to try Monel* nickel-copper alloy pickling hooks. The result? The photo above gives you the answer. This hook has been on the pickling line five years, three shifts a day—yet you can see its excellent condition. Today, this Monel hook is expected to outlast predecessors by a wide margin.

Monel hooks last longer because Monel has excellent resistance to corrosion by sulfuric acid pickling solutions. Monel alloy is strong and tough. In fact, it's the strongest non-ferrous metal you can use for pickling equipment.

Monel hooks save money other ways, too

This combination of strength and corrosion resistance saves money in several ways. Besides longer life, it permits greater payloads. And because Monel alloy is readily fabricated and welded, a hook can be quickly and economically repaired if it's damaged. Or it can be rebuilt to extend service life even further.

Improves other pickling equipment, too

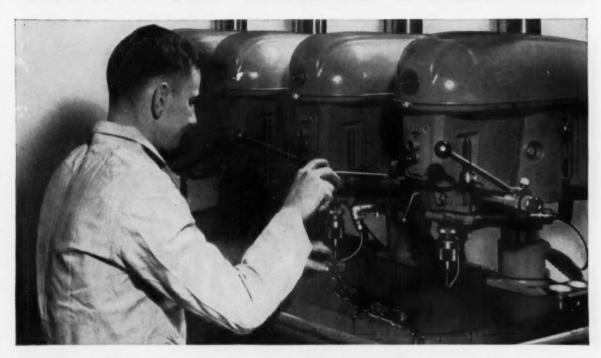
Not only in hooks, but in all pickling equipment—slings, chains, bolts, tierods— Monel alloy can save you money...cut deadweight, outlast other materials. To get an idea of savings you can expect, write Inco for a copy of a useful 32-page handbook, "Equipping the Pickle House for Greater Production at Lower Cost."

*Registered trademark

The International Nickel Company, Inc. 67 Wall Street New York 5, N. Y.

INCO NICKEL ALLOYS

DELTA 15" DRILL PRESSES



67% Savings on Precision Drilling of missile, electronic and instrument parts



DIAMETER TOLERANCES DOWN TO 0.0003 INCHES are maintained on some parts machined on Delta Drill Presses by Precise Products. Parts and jigs above show ingenious set-up required to achieve these consistently close tolerances. Stock may be stainless steel, brass, aluminum or beryllium—on runs as small as 10 and as large as 2,000 parts.

FREE DELTA INDUSTRIAL CATALOG

Get all the facts on how YOU can cut costs with Delta Industrial Tooling—write: Rockwell Mfg. Co., Delta Power Tool Division, 640 G N. Lexington Ave., Pittsburgh 8, Pa. Changeover from former methods to use of this fourspindle 15" Delta Drill Press resulted in 67% savings for Precise Products, specialists in producing small, close-tolerance parts. And according to B. Lachowitzer, owner of this Minneapolis firm, "In one year the new drill press saved enough to pay for itself."

Four-spindle construction lets operator do multiple drilling on one run of parts at one sitting. The perfect alignment between spindles, columns and table on Delta Multiple-Spindle Drill Presses assures accuracy—eliminates time-consuming resetting. With constant flow of cutting oil, drill life is greatly extended, reducing down time, regrinding, and rechucking.

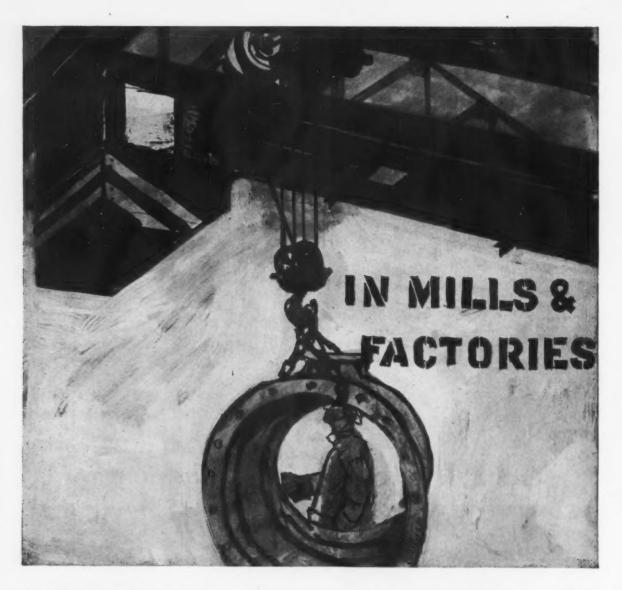
See Delta Drill Presses and a complete line of industrial metalworking tools and accessories at your nearest Delta Dealer . . . he's listed under "TOOLS" in the Yellow Pages. Choose from the WORLD'S MOST COMPLETE LINE of drill presses: 20", 17", 15", 14" and 14" Super-Hi Sensitive in floor, bench and overhead models.

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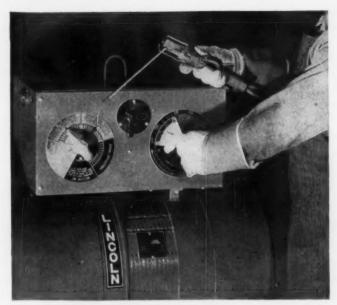
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Lincoln Shield-Arc Motor-Generator Welders are Weldynamically designed for fast, easy welding under any conditions.

Dual Continuous Controls allow the weldor to select the kind of arc he likes to work with. He uses the current control to select the welding heat, and the voltage control to select arc "snappiness" and to fine-tune the welding heat.

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Lincoln Applies Weldynamics in its own plant to cut manufacturing costs. These savings are passed on to you in better welding products for less cost.

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of Arc Welding Equipment

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JUST OFF THE PRESS and ready for you . . . the new Udylite Barrel Plating Bulletin! Whether you now have a barrel plating set-up . . . you are planning on installing one . . . or you just want to keep up with the latest methods of metal finishing, this bulletin provides invaluable ideas for a more profitable, productive plating operation. Loaded with pictures and specifications of up-to-date equipment, this book details what is needed for fast, accurate barrel plating . . . it even shows an ideal barrel plating layout and describes the necessary equipment. Also, it serves as a valuable checklist for keeping your plant well equipped. No modern minded plating shop should be without it. For a free copy contact your local Udylite representative today, or write direct to:

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Inspection of 75-foot Salem Rotary Hearth Furnace at The Timken Roller Bearing Company plant at Canton, Ohio.

Rotary hearth roof of B&W IFB gives nine years of service at the Timken Company

Installed as a replacement for a superduty firebrick sprung arch, over 35,000 B&W Insulating Firebrick were used in the roof of this rotary hearth furnace. Since installation nine years ago, just 300 9" equivalents have been used for maintenance—less than 1% replacement!

Throughout this period the furnace has been operated at temperatures

ranging from 2100 F to 2300 F on a continuous 6-day cycle at an average output of 20 tons per hour.

In addition to long service life, lightweight B&W Insulating Firebrick provide high fuel savings because of their low heat flow and heat storage. Lightweight IFB also simplify original furnace construction...make maintenance and patching easier. For more information on long-lasting, cost cutting B&W Insulating Firebrick, consult your B&W Refractories Representative or send for Bulletin R-2-H.

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Trucks containing motor sub-assemblies, move freely and constantly from work tables to the next process.

Special "Y" type device at top of truck mast automatically engages with the trolley rod moving on the Landahl Chainless Conveyor. Manual release at discharge station releases the truck. Let an experienced Landahl engineer help with your conveyor problems. Write for Bulletin LS-2.

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MEMBER OF MATERIALS HANDLING INSTITUTE AND MONORAIL MANUFACTURERS ASSOCIATION



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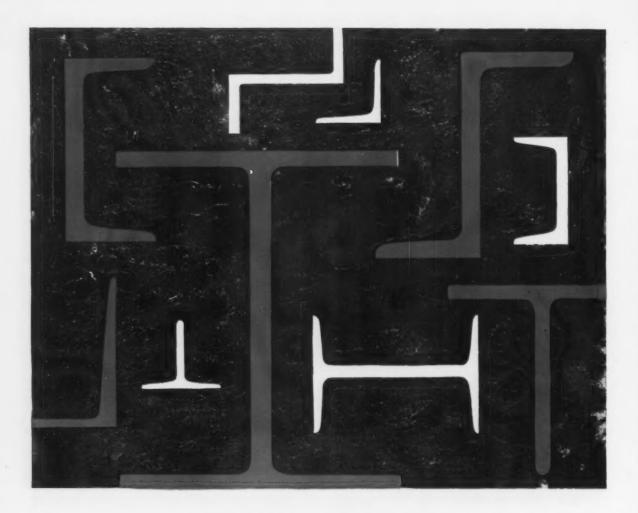


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STEEL MILL MACHINERY • MYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel



Use quality USS Structural Steels ... available at your local steel service center

Because of the wide-range distribution of USS Structural Steels, you'll find them available on a moment's notice at your nearby steel service center. These fine, quality-controlled USS Structural Steels are accepted and acknowledged everywhere.

Your steel service center can readily furnish you with USS Structural Shapes in both hot-rolled carbon and USS COR-TEN grades.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order structural steels from your steel service center, be sure to specify USS Structural Steels.

USS and Cor-Ten are registered trademarks





STEEL POLISHING SPEEDED 10-15% WITH "PG" WHEELS



MANUFACTURER: Heintz Division of Kelsey-Hayes Co.

ADDRESS: Philadelphia, Pennsylvania.

PRODUCT MANUFACTURED: Automotive Metal Stampings.

3M ABRASIVE USED: "PG" Wheels.

HOW 3M ABRASIVES ARE USED: Finishing operation. Remove die marks, scratches, and other forming defects from cold-rolled carbon steel auto grille bars, prior to plating.

OPERATIONAL DATA ON 3M METHOD: Grit 220 Resin Bond Cloth "PG" Wheel on double-spindle floor lathe with buff-wheel.

OPERATIONAL DATA ON PREVIOUS METHOD: 2-station, 3-step method. lst, #120 disc; 2nd, set-up wheel; 3rd, buff-wheel.

PROVEN ADVANTAGES OF 3M METHOD: Former 3-step operation reduced to 2 steps; "PG" Wheel and Buff. "PG" Wheel leaves no scratches on work piece; speeds production 10-15%.

OTHER 3M ABRASIVE PRODUCTS IN USE: "Three-M-ite" Resin Bond Cloth Portable "PG" Wheels on hand-grinders are used to remove in-use scratches, other imperfections from dies, without removing them from press. "PG" Wheels replaced hand methods, reduced repair time from 14 hours to 30 minutes.

WANT MORE INFORMATION? Send for free manual, "Modern Metal Finishing with 3M 'PG' Wheels." Write to 3M Co., St. Paul 6, Minn., Dept. DD-78.

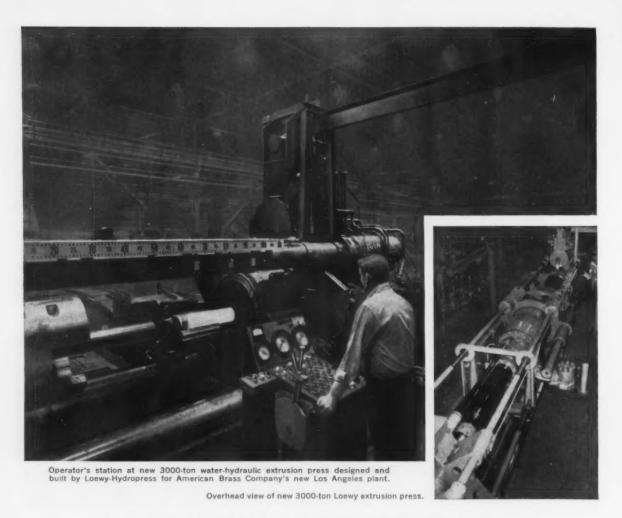
"PG" Wheels are manufactured in U.S.A by 3M Company, St. Paul 6, Minn. Export: 99 Park Avenue, New York. Canada: London, Ontario

3M Coated Abrasives

"PG" WHEELS

MINNESOTA MINING AND MANUFACTURING COMPANY





At American Brass Company, Los Angeles . . . new high-speed 3000-ton Loewy extrusion press

A new 3000-ton water-hydraulic extrusion press at the Los Angeles plant of American Brass Company now swells to six the number of Loewys in operation this year at this firm's plants throughout the country. Designed for the high-speed production of brass and copper extrusions—tubes of high concentricity, rods, sections and wire rod—this press is fitted with an independent external piercer and extrudes billets up to 32 in. long and 10 in. in diameter.

Many auxiliary operations within the press are performed by highly mechanized devices which reduce the number of personnel to a minimum: a special lateral die slide device, automatic billet handling, automatic dummy and cleanout disc cycle, pushbutton die changing, fast container changing system, mechanized runout table and means for removing extrusions from the table to the cutoff saw and beyond it to the cooling beds.

The fact that American Brass has called upon us time and again over a period of 16 years strongly testifies to our ability to provide machinery of the most advanced design and for long, trouble-free service. For further information on how our facilities may best serve your interests, write us at Dept, A-7.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills . Hydraulic machinery . Industrial engineering





Workmen busy on the Hussmann assembly line in St. Louis producing quality refrigerated showcases for food markets all over the world.

Accent on Excellence

Youngstown hot and cold-rolled sheets



touch in Youngstown service will help you create

products with an "accent on excellence".



YOUNGSTOWN

SHEET AND TUBE COMPANY

do you have
OIL SEAL TROUBLES?

SUPERFINISH can solve them!

Here's a typical case where a shaft with ground surfaces was driven at a speed of 1750 r.p.m. The oil seals created enough heat to burn the shaft and stop the motor. To make matters worse, it was found that twice the original speed was necessary. So, the oil seal surfaces were Superfinished, and the shaft operated at a speed of 3500 r.p.m. With the Superfinished surfaces, no heat was developed at this higher speed. No further trouble was encountered.

Superfinishing is a quick, simple and inexpensive process. Oil seal surfaces are but one of the many applications where it can save you money. Not only can it eliminate trouble, but often it can help you reduce manufacturing costs. Gisholt engineers can advise you regarding its applications.

Write now for new Superfinish Catalog No. 1169-B

C. Superimenter's

Superfinished

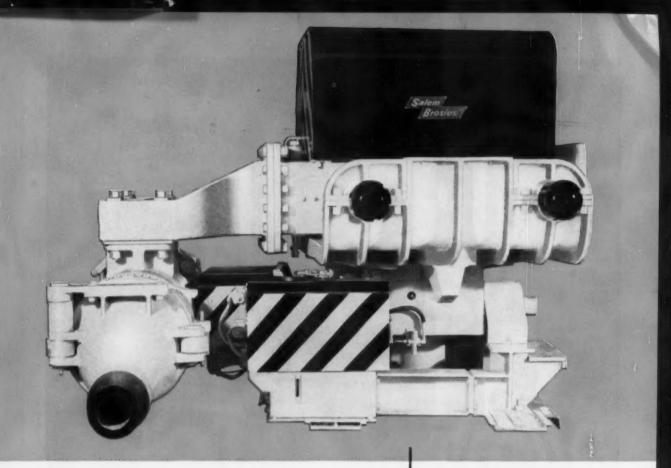
Superfinished

G MACHINE COMPANY



Madison 10, Wisconsin

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY-REBUILT MACHINES WITH NEW MACHINE GUARANTEE



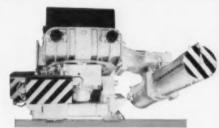
New ...

All-hydraulic clay gun meets modern blast furnace needs

After years of design and testing, Salem-Brosius now offers the iron-making industry a completely new hydraulic clay gun compatible to the trend toward greater capacity and higher pressure furnaces. The new gun embodies the following completely unique set of features:

- * Standard nozzle pressures up to 800 psi (higher nozzle pressures optional)
- Optional 12 or 15 cu ft clay barrel capacity
- Positive gun lock in tap hole with no latches or connections to the furnace
- e Positive, accurate gun path travel
- Automatic or single stage cycling
- Push-button control
- * Pedestal base with no mountings
- No relative motion between clay barrel and base
- No gears, tracks, pinions, or racks to wear
- Suitable for either right or left hand operation
- * Removable, renewable liners in clay
- * All motions hydraulically actuated and electrically controlled
- * Non-inflammable hydraulic fluid eliminates fire hazards

For further information concerning this gun, write to Salem-Brosius.



Barrel in tilted position. Travel path is fast and accurate—nozzle locks into tap hole.



Construction is rugged and simple for long-life and easy maintenance.

SALEM-BROSIUS.INC.

CARNEGIE, PENNSYLVANIA

In Canada: Salem Engineering Limited • 1525 Bloor Street West, Toronto 9, Ontario



Maple St., Small Town, U.S.A.

"NOTHING EVER HAPPENS"...

A home town—like your town. A place where people said "it couldn't happen to us."

But it did. Like a whip, a great tornado lashed down Maple Street, splintering houses, leaving people hurt—homeless—panic-stricken.

A desperate call went out for the Red Cross and quickly, automatically, the team went into action.

Red Cross nurses slipped into uniform . . . volunteers set up first aid stations . . . canteens fed the hungry. Later, Red Cross money and work helped rebuild the town.

Last year was one of the worst disaster years of this century, and the year before, 1956, was almost as bad. Every month and in every state, the Red Cross strained to the limit as hurricanes, floods, tornadoes, forest fires swept across the country.

Red Cross receives no government funds—depends entirely upon you for support. Give as much as you can. Your dollars may go to your own town when it needs them most.

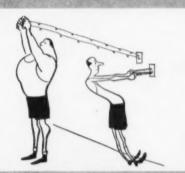
Join and Serve



SPACE CONTRIBUTED BY THE IRON AGE



VISCOSITY COIL



EXECUTIVE COILS



SAFARI COIL

What do "Coils" mean to you?

Coils call to mind so many things. But if to you they mean springs, those mechanically precise activators of energy, then we're on common ground. Our organization specializes in all kinds—compression, extension, torsion, flat coil, volute . . . maintains unequalled engineering and manufacturing facilities throughout the nation. So let us supplement the work of your own engineers with our specialized knowledge and experience in the design and manufacture of springs, small stampings, and wire forms . . . made to your specifications.

Our "Picture Book of Springs" shows thousands of custom-produced parts, typical of our service. Write for a copy to pass along to interested people in your organization.



Associated Spring Corporation

Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y. B-G-R Division, Plymouth and Ann Arbor, Mich. Gibson Division, Chicago 14, III.

Gibson Division, Chicago 14, in.

Milwaukee Division, Milwaukee, Wis.

Raymond Manufacturing Division, Corry, Penna.
Ohio Division, Dayton, Ohio

F. N. Manross and Sons Division, Bristol, Conn. San Francisco Sales Office, Saratoga, Calif.

General Offices: Bristol, Connecticut

Seaboard Pacific Division, Gardena, Calif. Cleveland Sales Office, Cleveland, Ohio Dunbar Brothers Division, Bristol, Conn. Wallace Barnes Steel Division, Bristol, Conn.



Take heavier cuts at higher speeds, even on toughest alloys-with

NEW GULFCUT HEAVY DUTY SOLUBLE OIL

Here's a heavy duty emulsifying cutting oil that consistently produces better results. Gulfcut Heavy Duty Soluble lets you make heavier cuts at higher speed—even on chrome-nickel steels and other tough alloys.

You'll get finer finishes and longer tool life, too, with Gulfcut Heavy Duty Soluble Oil. Here's why it does a better job than other emulsifying oils.

- HIGH SURFACE-WETTING PROPERTIES for more effective cooling.
- POTENT RUST INHIBITOR to protect product and tools against rust and corrosion.
- EXCELLENT EMULSION STABILITY, even in hardest water, for long life.

- POWERFUL ANTI-FOAM AND ANTI-WELD PROPERTIES.
- EFFECTIVE GERMICIDE to help eliminate rancidity and odor.

You can improve production and cut machining costs, with New Gulfcut Heavy Duty Soluble Oil. For more information, call a Gulf Sales Engineer, at your nearest Gulf office, or send for illustrated bulletin.

GULF OIL CORPORATION

Dept. DM, Gulf Building Pittsburgh 30, Pa.



How Link-Belt P.I.V. provides stepless speed control

By employing a positive chain drive to transmit power, Link-Belt's P.I.V. (Positive, Infinitely Variable) variable speed drive provides instant and positive speed settings, with no perceptive loss of speed regardless of load. Stepless variation of any speed from maximum to minimum can be obtained instantly, even while operating at full load.

The chain which forms the "heart" of P.I.V. is a self toothforming chain consisting of a series of overlapping steel laminations which serve as teeth and are free to move from side to side, singly or collectively (see below). This ingenious chain fits into radially grooved wheels (see below) which have teeth cut at a constant depth but of increasing width toward wheel periphery.

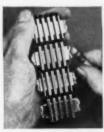


P.I.V.'s are compact, permitting installation as either a separate unit or as a built-in part of the driven machinery. Exceptional application flexibility can be accomplished by

incorporating both motor and helical gear sets integrally with the P.I.V. drive.

By means of pneumatic, electronic, hydraulic or mechanical controls, P.I.V.'s can be used to synchronize machine components or complete machines with a precision matched by no other method. Whether these processes involve tension, volume, synchronization, winding speeds, moisture content, product thickness or similar requirements, these controls sense variations quickly and compensate for change through the P.I.V. before product quality is affected. These unique P.I.V. drives are built

in a wide range of sizes and assembly types, in capacities from 1/2 to

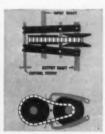




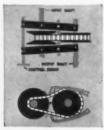
tooth-forming Teeth on radially chain consists of over-lapping steel lamina-tions serving as teeth. tooth-forming chain.



Chain teeth engage wheels to provide positive chain drive to transmit power.



Maximum speed setting of the grooved wheels produces high speed at output shaft.



of the grooved wheels produces low speed at P.I.V. output shaft.



PRINTING-P.I.V.'s on windup and dryer rolls prevent tension build-up on press running cellophane sheet.



PAPER MAKING--P.I.V. with remote operator control draw on differential drive paper machine.



TEXTILES—P.I.V.'s on rayon spinning machine control thread denier and speed of viscose metering pumps.

BOOKS 2274 and 2349 describe P.I.V. drives and controls, respectively. Get your copies from your nearby Link-Belt office or authorized stock-carrying distributor. LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Planes, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13): Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,318



A TRICKLE OR AN

AVALANCHE



with an Electrical or Mechanical Vibrating Conveyor in any capacity

BACK IN 1928 the Traylor Vibrator Company (acquired by Jeffrey in 1933) built the first electric vibrating conveyor, and you know what a tremendous success this line has been... feeders, dryers and coolers. Today they're on every class of material—feathers to lead, handling ounces and tons with equal economy and sureness.

In 1948 the men responsible for those electrical conveyors (still with Jeffrey, by the way) turned their attention to mechanical vibrating conveying.

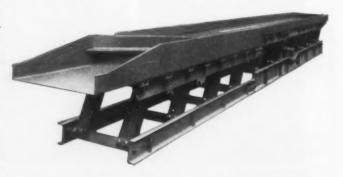
First the HMV heavy-duty mechanical vibrating unit was developed—proved highly efficient and dependable, and now accepted as "standard" by all industry. Then came the MMV mechanical vibrating conveyor for medium capacities, but with the many advantages of its predecessor. Finally the lightweight, compact, low-cost LMV completed the Jeffrey line.

Catalog 860-B describes the Jeffrey long line of vibrating conveyors and their application. The Jeffrey Manufacturing Company, 925 North Fourth Street, Columbus 16, Ohio.

MMV MEDIUM-DUTY CONVEYOR

LMV LIGHTWEIGHT CONVEYOR

HMV HEAVY-DUTY CONVEYOR



CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING



SOME MODEL EE FEATURES • A true high speed lathe for small work speed ranges up to 40 to 4000 R.P.M. 5 H.P. machine tool duty drive. • All electric drive direct to spindle through multiple "V" belts. No gears in

about a Hush-Hush operation

What's being produced here is restricted; but where and how it's made is a story in itself. This photo shows a section of the Experimental Machine Shop of the Systems Development Laboratories, Hughes Aircraft Company, Culver City. You know that output from a shop like this doesn't come from clunkers; obviously these machine tools are carefully chosen for the utmost in speed, versatility, and precision. If you can count 16 lathes (we can!) you'll be counting 16 Monarch 10" Model EE Sensitive Precision Toolmaker's Lathes! And this is only a small percentage of the Monarch lathes used in the Hughes plant.

Just take a look at the partial list of Model EE features and you'll see why it's unnecessary for us to generalize about the machine - though we'd like to emphasize again the value to users of the all-electric drive direct to spindle and the great range of speeds. And that the Air-Gage Tracer can be applied.

Here's a lathe in a class by itself. Our Booklet 305-1 tells all - and it's no secret! Write or call -

- headstock an absolute must for small high precision work.
- 60 thread changes and 50 feed changes! This, plus wide speed range, enables machine to handle at top efficiency any job within its swing capacity.
- For thread chasing up to 100% faster, has exclusive combination of electric leadscrew reverse and variable reverse speed control. Available also without leadscrew and other thread chasing parts.
- · Easy, fatigue-free operation. Base design lets operator work close in comfort.
- Flame hardened and ground ways for both carriage and tailstock. Bed all in one piece - no inserts.
- · Thousands of these machines in use attest to their wide acceptance for the turning of small precise work of all kinds.





Tubular parts-On even thin-walled tubes from 1/2 to 2-inches OD, splines and serrations can now be quickly and inexpensively Roto-Flo cold formed.



Long splines—can now be cold rolled on solid as well as tubular parts. 30° or 45° PA tooth forms can be made with this low-pressure method and axially fed parts.

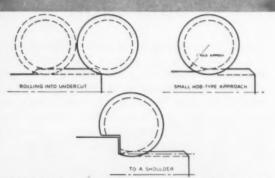
Innouncing a NEW ROTO-FLO MET

ROTO-FLO chipless process that cold forms toothed parts cold forms toothed cost is faster at lower cost is extended to a broader range of parts. The development complements present Roto-Flo equipment. Write for details!

- -for spline rolling tubular parts
- -for splines of any length
- -with versatile lower cost tooling
- -economical for shorter runs



Lower-cost tooling-Cylindrical forming racks reciprocate in opposed directions while a part is fed in axially. Racks are indexable to several settings for long life and lower tool inventories. No regrind costs are involved with these throwaway forming inserts.



All kinds of parts—are inexpensively splined or serrated with this versatile new Roto-Flo method. Notched racks can form full-depth teeth within 1/4 inch of a shoulder. Parts having the same diametral pitch can be rolled with the same rack.

May we have the Roto-Flo field engineer in your area show you how this new method can make your parts better.



7171 E. McNICHOLS RD., DETROIT 12, MICH., U.S.A. IN CANADA: COLONIAL TOOL CO. LTD.

Here it is!



"Grade Mark Service" for alloy steels...

gives you fast, accurate identification of stock!

"Grade Mark Service" is a bonus to alloy steel buyers. It means faster identification, speedier handling and better stock control of alloy steels purchased from U. S. Steel Supply.

Every alloy steel order shipped will have a seal which clearly identifies the grade of that particular bundle, thereby making it easier for your receiving department to check and stock incoming shipments. We believe it is especially important that high-grade steel be quality-controlled—all the way.

These bundles are steel-strapped, too—firmly and securely bound with USS Gerrard* Steel Strapping.

This adds up to: 1. Instant and positive identification of material on your receiving floor. 2. Safe and easy-to-handle bundles.

Technical Data

A test report and a heat-treatment guide are mailed to you with each lot of alloy steel you purchase. The test report gives you the actual chemistry, mechanical properties, or the hardenability together with the guaranteed minimum hardenability. The heat-treatment guide gives the recommended heat-treating and working temperatures.

Our "Grade Mark Service" for alloy steels includes: USS* Carilloy alloy steels—hot-rolled rounds, cold-finished rounds, squares, hexagons, "FC" (Free-Cutting) rounds; USS Carilloy* Aircraft Quality hot-rolled rounds and flats and cold-finished rounds, squares, hexagons, flats.

Here is an improved method of bundling and marking shipments of alloy steels. Why not see how you can benefit from "Grade Mark Service"? Call your local U. S. Steel Supply warehouse the next time you need alloy steel.

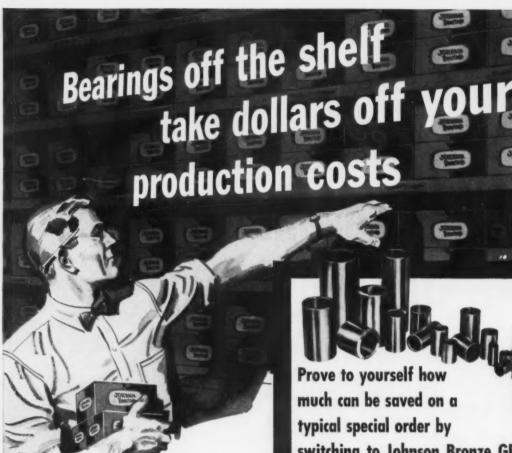
U. S. Steel Supply

Division of



United States Steel

Steel Service Centers, Coast to Coast to Coast to Mailing Address: P. O. Box 1099, Dept. E7, Chicago 90, III. - General Offices: 208 So. La Salle St., Chicago 4, III.



Johnson Bronze GP standard stock bearings can cut your production costs, whether your requirements are under a hundred . . . or in the thousands. Quality and tolerances are comparable to any special bearing, but the tooling and machining costs are eliminated.

The 900 sizes available from your Johnson Bronze distributor will fill the bill in almost every case. Check with him before you order a costly special.

switching to Johnson Bronze GP's

	10 BEARINGS 1/2"x1"x11/2"	
	SPECIAL BEARINGS	JOHNSON GP'S
PATTERN COST	\$	NONE
CASTING COST	\$	NONE
TOOLING COST	\$	NONE
MACHINING COST	\$	NONE*
SCRAP LOSS	\$	NONE
TOTAL COST	\$	\$12.70
DELIVERY DATE	ś	IMMEDIATE

*Possibly slight alteration for oil grooves, holes

Johnson Bronze

505 South Mill Street . New Castle, Pa.

Subsidiary: Apex Bronze Foundry Co., Oakland, Cal.



over 175 sizes



GENERAL PURPOSE over 900 sizes



UNIVERSAL BRONZE BARS over 400 sizes



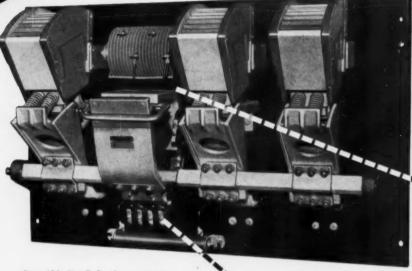
LEDALOYL over 400 sizes



ELECTRIC MOTOR over 350 sizes







Type 425, Size 7, 3-pole ac contactor with self-contained ac to dc economized control circuit.

tor mill duty applications...
ac contactors
with dc magnets

dc operation offers these advantages:

- Not affected by dirt and corrosion
- · Quiet operation minimum wear
- · Wide pickup and operating range
- · Low inertia design
- Low operating burden

All Allis-Chalmers ac contactors, from Size 4 through 8, are available with dc operation. The advantages this offers, combined with clean-cut, simplified construction and the longer contact and arc chute life of ACBO Arc Centering Blowout, are your

assurance of contactors that will withstand the heavy demands of mill duty service.

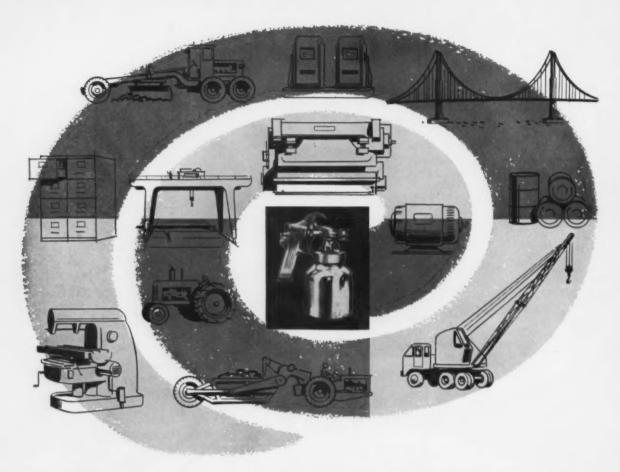
Whenever you specify low voltage starters, be sure to get these long-life features provided by Allis-Chalmers contactors. It is these contactors that make the complete range of Allis-Chalmers starters the dependable performers they are.

Get all the Facts

Call your nearby A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.



ALLIS-CHALMERS



Great advance in "air-dry" paint quality at no cost premium

with new Isophthalic based resins

With Oronite's superior new raw material, Isophthalic, years of extra service can be added to your metal surface coatings. Stronger film to metal bonding, outstanding film flexibility and better gloss retention of Isophthalic based coatings means improved paint performance. The tougher Isophthalic based films also have greater abrasion resistance, hold up far better under severe weather exposure, are more resistant to chemical and industrial fumes.

DEMONSTRATION—FORMULATIONS—PROOF. Let Oronite or your resins supplier show you how Isophthalic based resins can benefit the coatings you use. Oronite field representatives can demonstrate to you the superior properties of Isophthalic resin coatings—whatever your product requirements. Just contact the Oronite office nearest you.



ORONITE CHEMICAL COMPANY

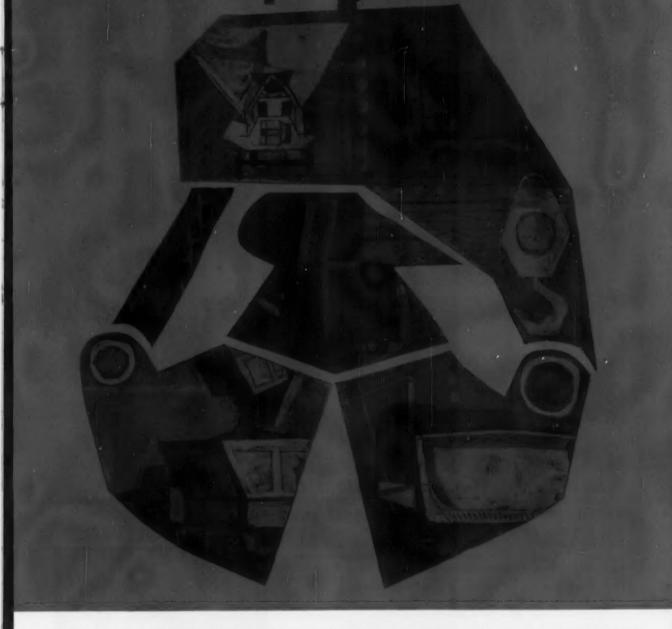
A CALIFORNIA CHEMICAL COMPANY SUBSIDIARY

EXECUTIVE OFFICES • 200 Bush Street, San Francisco 20, California SALES OFFICES • New York, Boston, Wilmington, Chicago, Cincinnati, Cleveland, Houston, Tuisa, Los Angeles, San Francisco, Seattle

Foreign Affiliate: California Chemical International, Inc., San Francisco, Geneva, Panama

4004

AMBALLOY. A. M. BYERS ELECTRIC FURNACE QUALITY STEEL PRODUCTS



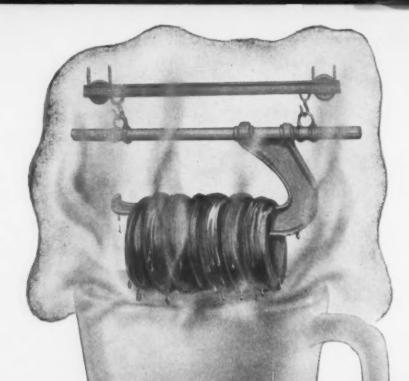
BYLOY W2 ADDS STRENGTH, INCREASES WEAR-RESISTANCE

BYLOY Grade W2 is a high-strength, abrasion-resistant steel, which attains superior physical properties through heat treating.

The combination of manganese, molybdenum, copper and boron—alloyed with steel in proper balance and proportion—results in great strength and high fatigue resistance. This alloy is available now in hot rolled plates and bars which can be heat treated to several hardness ranges.

Automotive, mining, agricultural, earth moving and conveyor equipment are just a few of the end-product applications where BYLOY wears so well. Call in the Byers metallurgist for information on BYLOY, or any of the other electric furnace steels we produce. Write: A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

A growth company with the emphasis on quality and service A. M. BYERS COMPANY



DUNKING IS NOT FOR STEEL ROD

Wheelabrator® abrasive blast descaling automates wire drawing and processing lines

Through application of Wheelabrator blast descaling, it is now possible to clean, coat, draw, and cold head in one continuous operation and secure the following advantages:

- * Strand cleaning and coating ahead of cold drawing
- * Faster, more uniform cleaning
- * Superior finish for coating and die lubrication
- * Elimination of multiple handling of hot rolled coils

These cost-cutting Wheelabrator advantages are already being obtained by prominent producers of wire products in descaling various size rod at speeds up to 600 f.p.m. New applications in the wire products field are constantly being developed. It will pay you to investigate the Wheelabrator for

your cleaning problems. Write today for complete information.

Send for Bulletin No. 148-D

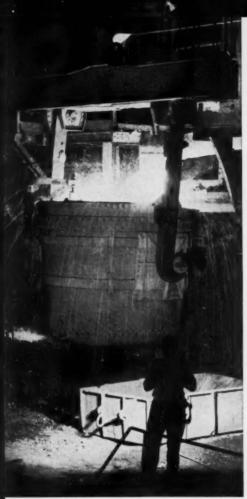


WHEELABRATOR

510 South Byrkit Street,

Mishawaka, Indiana

Canadian Offices: Scarborough (Toronto) - Montreal



ALCO steel, made in small heats to exact metallurgical specifications, is your assurance of high-quality forgings.

Alco's regular forgings offer many opportunities for cost reduction in machine set-up and tooling.



HOW ALCO FORGINGS HELP LOWER COSTS

Forgings from ALCO are controlled during every step of production to assure uniformity and conformance to your specifications.

In either regular or Hi-Qua-Led® grades in any AISI specification, or in stainless steel, ALCO circular and opendie forgings offer you unique advantages. They can lower your costs in machine set-up and tooling, because you are able to standardize procedures and set machining speeds for the best overall economy. Yet this extra oppor-

tunity for profit is obtained with no additional expense.

ALCO's forged and rolled circular forgings range from 18 to 145 in. OD; open-die forgings from 500 to 30,000 lb and 40 ft in length; mandrelled ring forgings to approximately 60 in. wide.

Your inquiries will receive prompt processing. For more information, contact your nearest ALCO sales office, or write ALCO Products, Inc., Department 157, Schenectady, New York.

ALCO

ALCO PRODUCTS, INC.

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

YOU CAN FIND BOTH THE **BIGGEST AND THE BEST AT** YOUR COMMERCIAL HEAT TREATER







A new gas fired Homocarb said to be the world's largest.

A Vacuum Heat Treating Furnace for special materials.

Large capacity vertical furnace for heat treating large parts.

The three furnaces shown on this page are units of the facilities of commercial heat treating plants in three different sections of the country.

Today, with the ever growing demand for better heat treating, economical volume equipment of this sort is becoming essential and the commercial heat treater has been alert to industry's requirements.

Quality work and versatility are the keynotes of this industry's objectives when treating the thousands of vital, intricate, and costly components of important products.

Whatever your heat treating problem, and whether it involves pounds or tons, always consult your commercial plant

THERE'S A HEAT TREATING SPECIALIST NEAR YOUR PLANT-

American Metal Treatment Co.
Elizabeth, New Jersey
Anderson Steel Treating Co.
Detroit, Michigan
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Lyndhurst, New Jersey
Bennett Heat Treating Co., Inc.
Newark 3, New Jersey
Commercial Metal Treating, Inc.
Bridgeport, Connecticut
Cook Heat Treating Co. of Texas
Houston 11, Texas
The Dayton Forging & Heating Treating Houston 11. Texas

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Dayton 3. Ohio

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Dayton 6. Ohio

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D

Fred Heinzelman & Sons New York 12, New York Alfred Heller Heat Treating Co. New York 38, New York

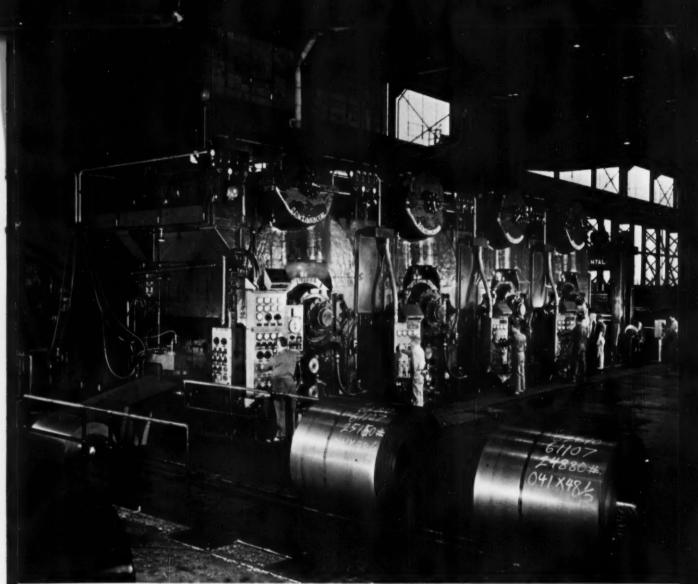
New York 38, New York
Hollywood Heat Treating Co.
Les Angeles 38, California
Ipsenlab of Rockford, Inc.
Reckford, Illinois
Ipsenlab of Canada Ltd.
Terento, Ontario
Le Heat Treating Company
Newark, New Jersey
The Leksaide Steel Improvement

The Lakeside Steel Improvement Co. Cleveland 14, Ohio

Cleveland 14, Unio Metallurgical, Inc. Minneapolis 14, Minnesota Metallurgical, Inc. Kansas City 8, Missouri New England Metallurgical Corp. South Boston 27, Massachusetts

Owego Heat Treat, Inc.
Apalachin, New York
Paulo Products Company
St. Louis 10, Missouri
Pittsburgh Commercial Heat Treating Co.
Pittsburgh I, Pennsylvania
Pittsburgh Metal Processing Co., Inc.
Pittsburgh IS, Pennsylvania
The Queen City Steal Treating Co.
Cincinnati 25, Ohio
J. W. Rax Company
Lansdale, Pennsylvania
Stapley P. Rockwall Company

Lansdale, Pennsylvania
Stanley P. Rockwell Company
Hartford 12, Connecticut
Scott & Son, Inc.
Rock Island, Illinois
Syracuse Heat Treating Corp.
Syracuse, New York
Temperature Processing Co.
North Arlington, New Jersey



60-inch, 4-stand tandem cold reduction mill at McLouth Steel Corporation, Detroit, Michigan

BLAW-KNOX COLD STRIP MILLS

Blaw-Knox designs and builds all types of cold reduction and temper mills for ferrous and non-ferrous work. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.



BLAW-KNOX COMPANY

Foundry and Mill Machinery Division Blaw-Knox Building • 300 Sixth Avenue Pittsburgh 22, Pennsylvania

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Ansco's superior separation of tonal values makes the difference! Flaws are uncovered more quickly, recorded more strikingly with the superb sensitivity of Ansco. Moreover, there is a particular Ansco Industrial X-ray Film for every inspection problem: Ansco Superay "A"—fast, fine grain film for most radiographic problems using either high or low voltages. Ansco Superay "B"—for highest contrast, somewhat slower in speed to record maximum definition. Ansco Superay "C"—for rapid exposures to make routine inspections. Ask for Ansco Films the next time you order and see the difference! Ansco, Binghamton, N. Y., A Division of General Aniline & Film Corporation.

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Industrial X-Ray

Easy to Operate

The New

COFFING Quik Lift

COIL CHAIN ELECTRIC HOIST

The new, lightweight Coffing Quik-Lift coil chain electric hoist was designed with the convenience and safety of the operator in mind. Mechanically interlocked push-button controls are mounted in a non-conducting plastic station, and control circuits are 115 volt, regardless of hoist voltage. The control station is shaped as a hand grip for convenience in pulling the hoist along on a trolley—the control cord incorporates a strain cable.

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The Coffing Quik-Lift is designed for convenient, economical operation, with protection for both operator and hoist. For complete details on this hoist, consult your distributor or write for Bulletin ADH-65.



- Capacities 1/4 to 2 Tons
- Interlocked Push-Button Controls
- Lightweight for Easy Portability
- Convenient Operation
- Accessibility

COFFING HOIST

DIVISION OF

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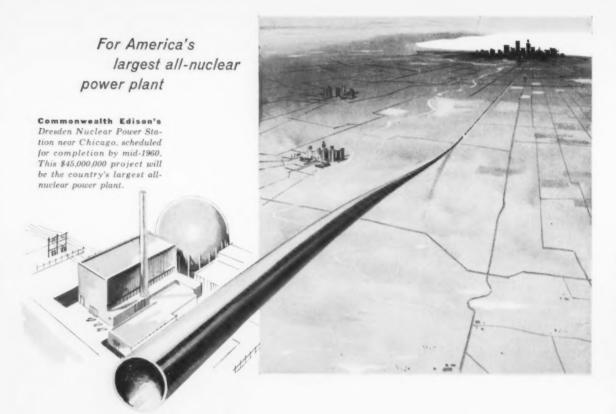






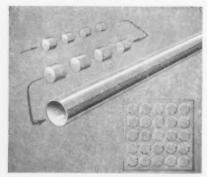
Ratchet Lever Hoists





44 MILES OF ZIRCONIUM TUBING

being processed by Mallory-Sharon



To form fuel rods, cylindrical pellets of UO: are inserted in Zircaloy tubing. Tubes are sealed and welded, then assembled into "bundles" to form the rod-type element (inset).

Here you see a striking example of zirconium's place in nuclear power ... and of Mallory-Sharon's leadership in zirconium production and technology.

The largest order ever placed for zirconium tubing—almost 44 miles of it—is now being processed by Mallory-Sharon, in conjunction with Bridgeport Brass Co., for the Dresden Nuclear Reactor. Made of reactor-grade Zircaloy-2, \(\frac{9}{6}\) "diameter and \(\frac{1}{12}\)" wall thickness, the tubing must meet rigid tolerances \(. . \) pass special pressure, sonic and corrosion tests. Fabrication of fuel elements is by the Atomic Power Equipment Dept. of General Electric, at San Jose, California, designers and builders of the Dresden Station for Commonwealth Edison.

As the largest integrated producer of zirconium, titanium and special metals, we invite you to write for information on either reactor-grade or commercial grade zirconium. Our Service Engineering group is ready to work with you *now* on either nuclear or commercial applications.

Write for new booklet, "Technical and Application Data on Zirconium and Hafnium".





DE LAVAL

IMO PUMPS

are now more versatile than ever

De Laval IMO pumps have proved that they do a dependable job over long years of service. The reason is IMO design simplicity. These constant displacement rotary pumps have only three moving parts—smoothly intermeshing rotors that propel the fluid axially in a steady flow without churning, pocketing or pulsation. There are no timing gears, cams, valves, sliding vanes, or reciprocating parts to wear or become noisy. *Quiet*, compact IMO pumps are excellent for direct-connected, high-speed operation.

In addition to these basic pumping advantages, the improved IMO gives you important new benefits shown in the cutaway illustration below.

Discharge flanges are DE LAVAL IMO PUMPS infinitely varied. You can use the most advantageous Inlet can be rotated to can also be used as suit installation arrangement. hydraulic motors. piping method to suit installation requirements. Designed for either conventional packing or mechanical seals. Sealing method may be changed in your plant with a simple kit. Nodular iron Higher pressure units are built casings for high by adding idler rotor and housing pressure service have sections to the low pressure design. high shock capacity. Parts for the same rotor size are interchangeable over the Any position mounting is entire pressure range. possible without factory modification. Internal parts are designed as a package so that units can be built into your machines.

Bulletin 3001 gives data on improved De Laval IMO pumps. Send for your copy today.



DE LAVAL STEAM TURBINE COMPANY 899 Nottingham Way, Trenton 2, New Jersey

PROGRESS REPORT ON INLAND EXPANSION

By December, 1958-500,000 additional tons of cold rolled sheets and enameling iron.



Hidden Grinding Benefit

If you are now centerless grinding steel and concerned about induced tensile stresses due to grinding, your worries may be over. Diffraction studies indicate a compressive stress about 0.001 to 0.002 in. deep normally results from centerless grinding. The reason: At the very end of the grinding cycle the abrasives actually pound the steel. The effect is comparable to that produced by shot peening.

On Small Motor Production

Makers of small motors are cutting production time by stocking more parts. Instead of making components as needed, plants will maintain stocks of shafts, bases and other standard items. This enables them to give 3-week delivery without carrying large finished inventories.

Scales Fit Electronic Age

New scales are transmitting weight data electronically to a variety of remotely controlled business machines: typewriters, tape punches, adding machines, and digital controllers. Scales need no longer be viewed as isolated, unrelated units in scattered plant areas. Plant-wide weighing can be phase of overall cost-control program.

Non-Fuming Aluminum Dip

Non-fuming, a new aluminum bright dip eliminates corrosive brown nitrogen oxide fumes from the bath and work in transfer. The material is easy to control and stable enough to withstand effects of a weekend shutdown. Sludging and pitting is reduced.

New Check on Local Strains

A new direct method for measuring local strains uses a pair of replicas of surface under test. Developed to check stresses in aircraft structures, the method is to inscribe a light pattern on the surface and to take two replicas of fusible metal, one with structure loaded and

one with structure unloaded. By comparing displacements of pattern, elastic strains can be deduced to within 0.005 pct over a 0.5-in. gage length.

Bill to Exclude Aluminum

Aluminum stockpile proposal won't be included in final version of mineral bill, congressional insiders say. Most powerful arguments against it:

1. Government aid to the industry since 1945 has totaled \$1.5 billion in facilities and purchases of metal. 2. Domestic producers still have right to put metal in stockpile if price gets too low.

Low-Cost Outgassing

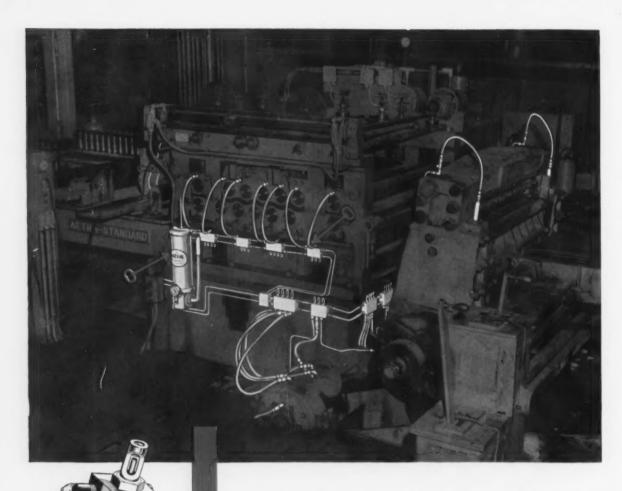
Possibly the simplest, least expensive way of ridding cadmium-plated steel of the effects of hydrogen embrittlement was announced recently. It involves a 1-hour baking treatment. But unlike other baking treatments, it concentrates on the first 0.0001-in. thickness of plate. Once this layer is outgassed, additional plate thickness is not a significant factor.

Steel Users in a Fix?

Steel price uncertainty has placed a wide range of suppliers in a quandry. Makers of gear reducers, bearings, electric motors, fabricated structurals, and others are now quoting firm prices to customers. A steel price increase will wipe out their profit margins. On the other hand business is too competitive to anticipate an increase in setting their own prices.

Bid on Light-Weight Paving

Two bridges will come up for bid in the near future to mark the first use of light-weight concrete in a highway bridge. Heretofore the heavy strains of traffic have caused highway departments to steer clear of the light-weight (expanded-shale or slag-aggregate) material. Laboratory tests completed this spring, however, suggest compressive strengths exceeding 5000 psi.



Farval assures continuous lubrication on J&L's continuous galvanizing line

ON the continuous galvanizing line at Jones & Laughlin's Pittsburgh Works Division, uninterrupted output is essential to keep operating costs at a minimum. To maintain full production while lubrication of bearing surfaces is carried out, J&L installed a manually-operated Farval lubrication system on the line's Hallden shear.

FARVAL

-Studies in Centralized Lubrication No. 225

On thousands of metalworking machines as critical to production as this shear, Farval lubrication systems have provided troublefree service for as many as 30 years. That dependability reflects Farval's years of experience in developing lubrication systems for every metalworking application.

Let a Farval lubrication system help cut your down-time and maintenance costs. Ask for revised Bulletin 26-S. Write The Farval Corporation, 3282 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

KEYS TO ADEQUATE LUBRICATION

—wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.



Have We Outsmarted Ourselves On Russian Tool Ban?

A British tool builder says our embargo on tools for Russia has boomeranged.

Asquith a s s e r t s ban has forced Reds to build a powerful machine tool industry in selfdefense.—By G. F. Sullivan.

London—"U. S. insistence upon banning sale of certain types of machine tools to Communist bloc countries has hurt the West strategically, politically, and economically.

"It has caused Russia to accelerate the build up of a powerful machine tool industry. Now, Russia and the Eastern-bloc countries are invading markets in Europe, South America, India, and elsewhere. They're selling good machines at prices below what we British are quoting."

These are the words of Robert W. Asquith, whose firm, Asquith Machine Tool Corp., is one of the largest machine tool builders in Great Britain. Not only has he the facts on price quotations to back up his assertion, but he probably knows more about the Russian machine tool industry than any westerner. Mr. Asquith was interviewed in London by The IRON AGE shortly after his return from a tour of Soviet machine tool plants-his fourth visit to the Russian machine tool industry in the past five years. He said:

Progress Report—"I was absolutely amazed at the state of development of the Russian machine tool industry. I have been able to follow it through these periodic visits over the years and I assure



RUSSIAN HARD SELL: The Reds are in a "big push" for world markets. This machine tool was a come-on at the Leipzig Spring Fair this year.

you they are making remarkable progress.

"On this latest trip I saw a boring machine plant in Leningrad, a transfer machine tool plant in Moscow and a factory in Odessa that makes radial drills. I'd estimate that they'll make as many radial drills there this year as both the U. S. and Britain together made in 1957.

"Judging from production cycles and units I saw in process, I would guess that this Odessa plant alone turns out one radial drill an hour, 24 hours a day."

Quality Good — Asked about quality, Mr. Asquith said that surface finish on castings and things that might be called frills were of little concern to the Russians. But overall quality is good, he added.

He said that he saw no reason to dispute the Soviet claim that they had produced 125,000 machine tools last year (U. S. production

Will U. S. Relent on Tools For Russia?

The NATO powers are now considering modifications of the embargo on shipments of machinery and machine tools to the Soviet Union. That embargo placed on the "critical list" a number of types and sizes of machines, designed to prevent Russia from buying armament-making machinery.

Here is an opinion on it from R. W. Asquith, one of Great Britain's largest machine tool builders—a man who probably knows as much as any Westerner about Russia's machine tool industry:

"Anything short of complete lifting of the embargo would, in my opinion, be utterly useless. It remains one of the worst examples of short-sighted diplomacy in recent times. It has failed in its major purpose; it has not prevented Russia from building guided missiles and a huge jet aircraft fleet. Worse, it has stimulated buildup of a powerful machine tool industry in the East-bloc nations. Now, that artificially-stimulated industry is beginning to compete ruthlessly with the West in world markets. If the trend continues we shall have a serious problem in this area within a very few years."

at World War II peak in 1942: 307,000).

Production High—"The management at a plant making 6-in. floor type boring and milling machines told me that it takes 5 to 6 weeks from the time they start an order through the shop until they ship. This is a fantastic rate, but from what I saw I would not be inclined to dispute it."

At Moscow, we saw a huge showing of USSR tools at the Industrial and Agricultural Exposition. An interesting feature there is a transfer machine to make shafts for lathe gear boxes. It has a 3½-min. cycle, makes seven or eight sizes, requires only 25 min. to change the whole unit over from one size to another.

Is It Too Late?—Asked what could be done now, Mr. Asquith replied: "I think it's too late to regain what we've lost. There is still some market left in Russia because their own production is not enough to supply all the things—motor-scooters, refrigerators, etc.,—which

they're planning. I think we've missed the cream of it, and, as one Russian said to me, 'If you don't change your tactics (meaning the embargo) in the next year or so, you are out for all time.'"

At which point the reader may be inclined to ask, "so what?" To which the reply would be something like this: "Your government's insistence upon the embargo has not only caused the loss of the Russian market but so strengthened Soviet industry that it is now going to take business from U. S., British, and other western manufacturers."

Russian Tactics—We asked how, if the Russians needed tools for their own economy, they could export them? The answer lies in politically directed exports for any number of reasons, not the least of which is a desire to impress the world with their technology.

Example: Norwegian representatives of the Soviet machine tool industry are offering "a fully up to date complete horizontal boring mill with an 85-mm (3,4-in.) spindle" for 80,000 kroner (\$11,400, or about half the U. S. price). We have seen similarly low prices on other tools and a report that several Norwegian firms, including a well-known shipbuilder, have contracted to buy Russian-made tools.

Buy Now, Pay Later - Aside from the low price, the terms are remarkable. Here is an extract from a Soviet sales letter which was circulated in Norway: "Machines are delivered to you for full utilization for a period of one-half or one year. At termination of the period agreed one will discuss your taking possession of the machine and the prices . . . The only amount exempted from this arrangement is a small percentage covering my firm's expenses in connection with the importation of the machines . . ."

This is the second of a twopart series discussing European views on trade with Russia. For the German viewpoint, see The IRON AGE, July 3, '58, page 26. Reprints are available as long as the supply lasts. Write to: Reader Service Dept., The IRON AGE, Chestnut & 56th St., Philadelphia 39, Pa.

Construction Boosts Steel Shipments

Higher construction a ctivity helped boost finished steel shipments during May. The American Iron and Steel Institute reports mills shipped 4,649,499 tons of finished steel in May, compared with 4,372,-971 tons in April.

Construction, including maintenance, received 824,091 tons directly from mills during May, an increase of 170,000 tons over April. Heavy structural shapes ran 346,485 tons in May, up 45,000 tons from April.

Shipments to leading markets in May included: warehouses, 881,-050 tons, up nearly 75,000 tons; automotive, 526,948 tons, up 64,-000 tons; containers, 538,990 tons, down more than 51,000 tons.

Aluminum Import Battle Looms

Industry Split Over Whether a Threat Exists

There'll be no legislative help for aluminum this session.

But issue is getting hotter as it is dumped in Administration's lap.—By F. J. Starin.

 Legislation to help the domestic aluminum industry is just about dead.

Nevertheless, the matter of lowpriced aluminum imports and government assistance is fast becoming an even hotter issue.

Request Meeting — Spearheaded by Sen. Lister Hill (D., Ala.), 13 Senators requested Secretary of State John Foster Dulles and other key Administration people to meet with leaders of the aluminum industry to work out administrative solutions to their problems.

There is no general agreement among U. S. producers and fabricators that a threat does exist. And even those who say imports are doing damage don't agree on what must be done.

Immediate Help Needed—Some call for immediate action to cut off low-priced imports. A. A. Smith, Adam Metal Supply Co., New York aluminum warehouse, says his business in aluminum circles has dropped from 150,000 lb per month to 20,000 lb. He says that while imports may only account for 3 to 4 pct of U. S. sales, 90 pct of the imports hit New York.

There appears to be a chance for anti-dumping action. Reports from New York are that importers are starting sharp competition among themselves, driving prices lower than in the country of origin.

Suggest a Change—Other aluminum men say there must be a basic change in unrealistic government policies. They say the Administration has been trying to correct dollar deficiencies of some friendly

nations, by making some of our markets, including aluminum, more attractive to them. This is subjecting U. S. companies to unfair competition, they say.

Coming up fast as the most "popular problem" is Russian economic warfare. In a study aimed at throwing the spotlight on this issue, Reynolds Metals Co. reports, "Picking and choosing the most strategic areas in which to dump their metal, the Russians have begun a systematic campaign against the (U. S.) aluminum industry."

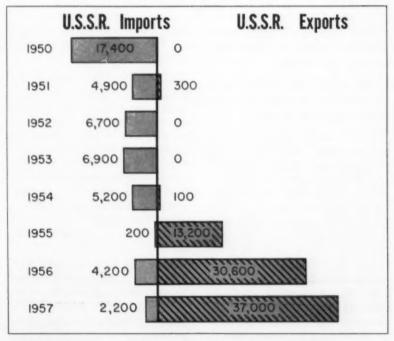
Without government-industry cooperation we can not defend ourselves against Russia's actions, insists one domestic producer.

Opponents of government action admit that Aluminium Ltd., traditional big seller in England, has called Russian cut-rate selling there unfair dumping. But they point out that Aluminium spokesmen in this country do not concede that this constitutes economic warfare, nor even that it will continue.

Target — Some fabricators also point out that when you talk imports you must include Aluminium Ltd. Over 90 pct of our imports of pig and ingot comes from Canada. And import restrictions would definitely minimize the Canadian producers' ability to buck a price hike by domestic mills to offset higher wage costs due in August.

On the matter of prices, the Aluminum Extruders Council, opposed to tariffs, says U. S. producers have sold in European and Asian markets at well under the U. S. price about which they now complain.

Are USSR Exports the Real Problem?



TRADE: Short tons of aluminum to and from the Soviet Bloc.

Army Parades Missile Muscle

Big Shoot Holds Lessons for Would-be Suppliers



TALKING IT OVER: Gen. Maxwell D. Taylor, Army chief of staff, Clifford Hood, president, U. S. Steel Corp., and Tom Campbell, editor-in-chief, The IRON AGE, at White Sands, N. M., missile shoot.

The potential in the missile market is bigger than you think. Buildup coming fast.

But if you want to get in on it, better put your best foot forward.—By Tom Campbell.

■ If you want confirmation of our defense effort, don't look to the Pentagon — go to the hinterland. For two days last week at White Sands, N. M., the Army had one of its biggest shoots yet to show off its hardware. It did a marvelous job for the 300 or more industrialists, military brass, and the press.

You might wonder why so much money is being spent on missiles other than the intercontinental missiles. The Nikes and the other hardware are being continually upgraded in quality and fire power. But as the realists at White Sands said last week, the Russians have as much if not more than we have in guided missiles.

It's Big—But that still isn't the full story that unfolded for industrialists and for companies who will in the future join the missile buildup. Few outside the military or outside the firms which have been in the missile programs for so long have any idea of the magnitude of the production, material, and labor requirements that will be assigned the missiles in the next few years. One word applies—"fantastic."

The lesson for prime contractorsto-be, for sub-contractors-to-be, and for sub subs is: Get into the missile information swim, keep close to what is going on, don't get greedy or think you will strike payload overnight; put your best and most intelligent men on the job, work closely with the armed services.

It's Moving—This is not just high flown talk, it is a fact and it was amply demonstrated at White Sands, Fort Bliss, and other proving grounds. There is a new spirit of cooperation minus the rumors, the misunderstandings, and the backlash of bureacracy.

Most of the missiles shot off last week were not necessarily fresh news in themselves. But there was news in that each firing and each demonstration is teaching us something new. It is now clear that without constant tests and revisions in the air-to-air, ground-to-air, and ground-to-ground missiles we can't hope to get the complete answer to an anti-missile missile. The past and present headaches for the Army and for firms associated with it as prime contractors or subs are milestones that are beginning to pay off.

It's Important—A major example of what is going on: The Nike Zeus now being perfected is the antimissile missile of the future. It could not be developed were it not for the basic work done some years ago and now being continued on the various rockets and missiles. But because of what has been learned the Zeus will probably be operational in three years or so. It will be our defense to the intercontinental ballistic missiles.

The Case for Steel In Missiles

At long last the steel industry is now entering missile programs without rumors, misstatements, and misunderstandings. This has been made possible because people familiar with steel design have gotten well into the picture. Once the problem of heat, weight, and physicals was understood, success in design and use came quickly.

Early in the game the use of steel in missiles and launchers was fogged by arguments about heat, excess weight, and unusual stress.

Blood, Sweat, and Tears—Misinformation about launchers was rampant in 1953 and later. The question of heat came up frequently because it appeared that design of the missile placed the blast too close to launched parts or equipment. Once that angle was cleared up by actual design and test the battle of steel for the launchers was won. But it took a lot of hard work and detailed study tending toward safety for personnel and equipment.

The military in the beginning had too little knowledge of steel. Surface questions of weight and resistance to heat plus a lot of other off-the-top-of-the-head ideas kept back the full use of steel in its proper function. Now that is all past.

Steel's Goal—Consolidated Western Steel Div. of U. S. Steel estimates that more than 5000 parts go into a Nike launcher. This firm which is a sub sub contractor on all the Nike launchers finds that as fast as one problem is washed out others come up, but now the situation is normal because the difficulties are those of revision—not omission.

The steel industry's goals today for steel in missiles may be summed up about as follows: Workability with close tolerances on welding, forming, and joining; maximum heat resistance, high strength with low weight, flexibility of temperature so as to meet the demands of —60°F to 180°F.

Looking Ahead — Looking into the future the problems of the steel industry in the long range missiles will be no more difficult to solve than were encountered in producing the Army's Nike-Ajax and Nike-Hercules.



ROOTING AROUND: An International TD-24 tractor clears the way for a two-mile stretch of road between Warrior and Hayden, Ala.

Earthmoving Upturn

 Earthmoving equipment sales are riding at a rate the industry didn't dare hope for 45 days ago.

Several major producers report that May sales shaped up better than expected. And contrary to historic annual sales curves, a total gain of 5 pct in June sales is looked for when final figures are in.

March Start—At least four major firms report the sales advance that began in March continued through May. At least three report that June sales will exceed May levels. One will run even. Another refuses comment, but admits that June sales are "surprisingly close" to the May figure.

The industry giant, Caterpillar, reports \$51,078,722 in May sales. This is only a 2 pet drop from April sales of \$51,972,000, the company's best month in 1958.

Counter to Season—Historically, the earthmoving equipment industry has its highest sales in early spring, drops off during the summer months, then builds to a second but lower peak in early fall.

A first-half sales gain was expected this year (The IRON AGE, March 27, p. 69), but the burst of selling in the past 30 days exceeded all expectations. Several producers are adding workers, canceling some vacation schedules, and considering building up raw materials inventories.

No Dumping — The industry is still 24 pct off last year, and it is still dogged by a report that one manufacturer has enough finished inventory on hand to flood the earthmoving equipment market.

Some foreign and domestic buyers have hung back waiting for inventories to be dumped and prices cut. The inventory wasn't dumped. The market is firm and rising.

The optimism is spreading to smaller firms.

Iron Ore From Copper Cliff



PELLETIZING: A Lurgi ball disk at International Nickel's iron ore recovery plant, Copper Cliff, Ontario, turns out about 20 long tons of one-inch iron ore pellets per hour. The 16-ft diam disks are inclined at a 45-degree angle, and make four revolutions per minute.

Steel Picks Up Pay Increase Tab

Employment costs in the basic steel industry jumped by about 20¢ an hour on July 1 as new rates provided in the three-year contract with United Steelworkers of America took effect.

Directly affected are some 400,-000 hourly paid employees. They received wage increases averaging 9ϕ an hour plus a cost-of-living hike of 4ϕ an hour and added fringe benefits.

Taken with a living cost increase of 5¢ an hour Jan. 1, 1958, the current installment represents an employment cost increase that steel mills place somewhere between 25¢ and 30¢ an hour.

In addition, the mills are expected to increase the pay of salaried non-exempt workers by an amount that is in line with the hourly wage hike. At least one major mill is passing along the increase to office workers; the same company is deferring increases of exempt salaried people.

Fringe benefits changed on July 1 include: a one-third increase in shift differentials; an increase in premium

pay for holidays from 10 pct to 25 pct; an increase in the Sunday premium to 25 pct.

The steel pattern applies generally in aluminum, can making, and many fabricating industries. Increases for these take effect in the next month or shortly after.

RW, Thompson Merge

Ramo-Wooldridge Corp., which was a small California electronics firm in 1953 founded by two ex-Hughes Aircraft employees, last week merged with its majority stockholder, Thompson Products, Inc., of Cleveland.

The two founders, Dr. Dean E. Wooldridge and Dr. Simon Ramo, become president and executive vice president, respectively, of the new firm, Thompson Ramo Wooldridge Corp. Present president J. D. Wright moves up to board chairman succeeding Fred W. Crawford who will head the executive committee and serve as special consultant.

Ramo Wooldridge from its founding was a pioneer in industrial application of computers, aircraft and missiles guidance systems, and similar apparatus. It became an affiliate of Thompson in 1954. In 1955 its sales were \$10 million. In 1956 they hit \$28 million and last year were over \$42 million.

Volunteer Pay Cut

Employees of Douglas & Lomason Co., a Detroit automotive parts supplier, have agreed to take a 12.5 pct wage cut, ranging from 30 to 45 cents an hour.

Local 669, Allied Industrial Workers and Local 1, Metal Polishers and Platers Union agreed to the pay cut last week in order "to put the plating company in a better competitive position." The provision is part of a new two-year contract.

Charles E. Little, president of Local 669, said the firm at one time employed 1055, but 300 employees were laid off recently and the payroll is now down to 342 workers.

"For the last six months the company has been in a bad position and unable to compete because its wage rates are considerably higher than those of its competitors," Mr. Little said. "We realized something had to be done to preserve the jobs of our members."

Ormet Under Way

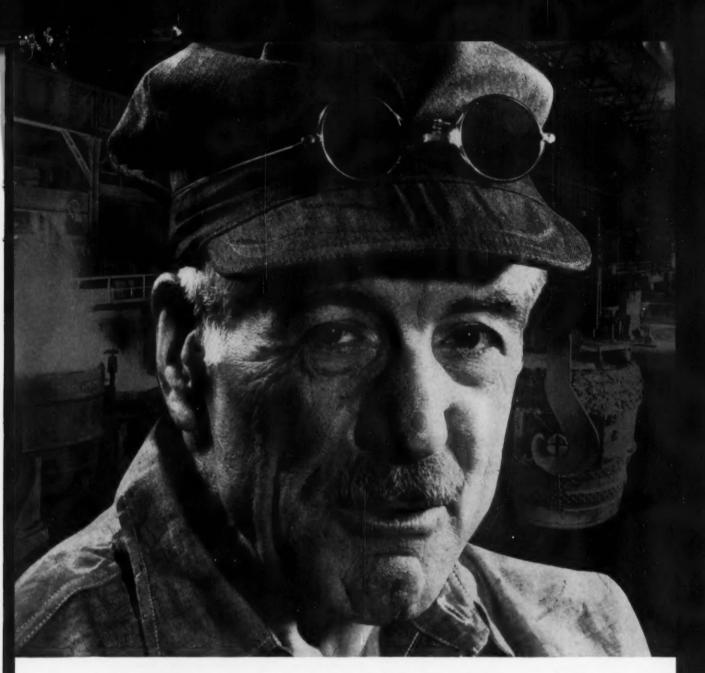
Ormet Corp., the nation's newest and fourth largest aluminum producer, has started initial alumina production at its Burnside, La., plant.

Full scale production at the \$55 million plant is scheduled by late summer. Ormet's second production facility, a \$110 million aluminum reduction plant near Clarington, O., is already in production.

More Tinplate

Inland Steel Co. will expand its tinplate capacity by 60 pct in a program that will enable it to treat two-thirds of its tin mill products by continuous annealing and to deliver the metal in coils.

No cost figures were announced, but the company reported that it has a total of \$125 million in unexpended appropriations.



"We get higher recoveries with CHROMTEMP ferrochrome"

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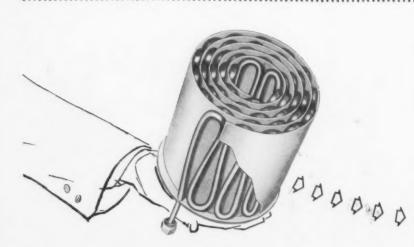
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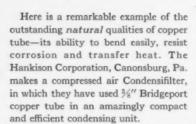
COPPER ALLOY BULLETIN



Reporting New Developments in Copper-Brass Alloys and Metalworking Methods



HOW COPPER BENDS TO THE TASK OF SQUEEZING IMPURITIES OUT OF AIR

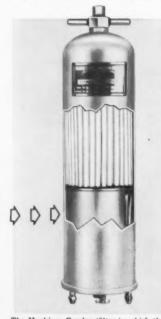


Over 66 feet of the tube is formed into a series of hairpin bends to provide more than 900 square inches of heat exchange area. The unit in which the tube is used is the heart of the Condensifilter. In service, air coming from the compresser passes through this condenser. Cooling water, circulated through the tube, cools the air and causes moisture and oil vapors to condense out of the air stream. The very function of the unit exposes it to corrosive condensate. Copper's natural corrosion resistance, coupled with its workability, makes it virtually the only metal that can do this job so well.

Bridgeport copper and brass alloys

lend themselves to many applications that many other metals cannot fill. Their workability, economical cost, resistance to corrosion, and long operating life are important advantages.

To learn more about Bridgeport



The Hankison Condensifilter in which the tubed condenser (left above) is installed.

metals and what they can do for you, call your Bridgeport Salesman. Backed by Bridgeport's Technical Service, he can give you valuable assistance in selecting the metal best suited to your product and production process.

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Lower finishing cost—The inherent beauty, lustre, and color of solid brass are far superior to those of other materials

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William Maxwell Scott, Jr.

His Plans Bend With the Trends

An engineer who can see beyond the rigid axioms of his profession can be a valuable management man.

Mr. Scott's skillful planning has been a real asset to I-T-E Circuit Breaker Co.

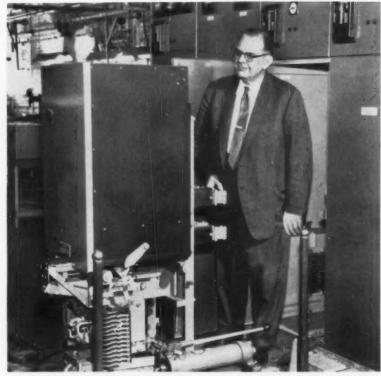
 If any one thing has brought I-T-E Circuit Breaker Co., Philadelphia, to eminence in the electrical equipment field it has been William Maxwell Scott, Jr.'s policy of flexibility.

Mr. Scott, president of I-T-E since 1942, has led the company through its greatest period of growth. In the past 10 years the firm's sales have more than quadrupled to almost \$125 million annually. With its seven divisions and six subsidiaries throughout the U. S. and Canada, the company has been able to adapt to changing times and market conditions rapidly.

Shift in Emphasis—Under Mr. Scott's guiding hand the company turned to production of special products such as jet engines and radar components during the war years. But he made certain that I-T-E kept a firm hold on its basic field, that of control and transmission of electrical power.

While the manned aircraft market has since given ground to missiles, the commercial power market has been one of the few areas to boom along despite the recession. And expansion at the I-T-E has largely been in this field. Thanks to Mr. Scott's flexibility concept, the firm has been able to shift emphasis in production with a minimum of turmoil.

He Favors Engineers-Mr. Scott



W. M. SCOTT, JR.: An industrial firm has to be flexible.

is a large man with an easy smile and a way with words. He is an engineer, and a good one. A file at his office is filled with patents he holds.

An engineering point of view, he says, has been enormously helpful to him in molding the I-T-E organization. His leaning toward engineers is reflected in the company's sales force. Most of the 200 sales people in the field are engineers.

You Have to Bend—He does offer a word of warning about engineers, however. Dealing as they do with exact dimensions and specific quantities, engineers tend to become rigid in their thinking, he says. "What may be a good idea today may not be tomorrow," Mr. Scott adds. "And you can't afford to be unyielding about it. You must be flexible."

Power's Future—The addition of many new companies into one organization called for the utmost in flexibility. There were different personnel, products, markets, and policies—all to be evolved into a unit.

Mr. Scott sees continuing growth for the electric power industry. "Electric power must grow," he says, "because industry as a whole, aside from hesitations in the economy, must continue to grow." a wide selection...



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Business Seeks Its Real Level

Over-adjustment to lower level of business has run its course. New orders are based on level of consumption.

But slack in capital goods means major upturn is not in sight in near future.

• Further evidence of a level business period, with a slight to moderate uptrend, builds up every day.

Some of the evidence is encouraging, like the pickup in new orders. But lack of any prospect of a significant capital goods buildup puts a sharp business upturn out of the question.

Orders Up—Although inventories continue to drop, new orders are beginning to reflect actual rate of consumer spending. Within the next few weeks, you should have a good indication of the level of business you can expect for some time.

Of course, you will have to make your own adjustments to the seasonal or other influences that directly affect your particular business. But the significant point is that re-adjustment, with its tendency to over-correct, is just about done.

First Improvement—One of the most encouraging of the current batch of indicators is the monthly tabulation of sales, new orders, and inventories.

In May, new orders for all manufacturing edged upward, although inventories continued to slide. Except for March, when orders improved over a dismal February, it represents the first monthly improvement since mid-1957.

Key Factor - Most economists

believe the new order index, whether its their own special tabulation or government figures, is the key factor in the economy for the rest of the year.

Reversing a trend that has prevailed for some time, durable goods showed increases in new orders, in contrast to a drop in May in orders for non-durables.

New orders for durables reached \$11.3 billion in May, up from \$10.8 billion. That's well under the level of the average of the last quarter of 1957, but still a significant improvement. June should show up even better, but July is still a question mark at this time.

Fast Write-Off Lacks Appeal

No Enthusiasm—On the capital goods side, everybody knows that industry's spending for new plants and equipment will taper off this year, and probably into next year.

But it's a little disturbing to realize that most of the big spenders for capital equipment would not step up capital goods spending even if granted the incentive of a 5-year tax write-off.

What It Means—The significance here is that these industries believe their capacity is sufficient for some time, and wouldn't step up their capital goods outlays even for a tax break.

This is pointed out in a recent survey conducted by Walter Kidde Constructors, Inc., engineers and builders for heavy industry. An extensive coverage of the largest companies indicates that a 5-year write-off would not significantly increase capital spending.

Little Interest — Although most conceded that a review of depreciation policies was urgently needed, only 52 of the 225 replying companies indicated a 5-year write-off would accelerate their spending for 1958, and that would only amount to a 3 pct increase. Looking ahead

into 1959, 78 of the companies said they would boost their capital outlays, if granted the fast tax write-off.

Price Index May Be Revised

Need for Improvement — With most major labor contracts now tied to the Bureau of Labor Statistics Consumer Price Index, this statistic has taken on greater importance than was ever intended for it.

In recent months, both labor and management have become critical of this index, which was once a mere indicator.

Study Asked—Congress is now being asked to put up \$5 million to finance a new U. S. Labor Dept. study of how Americans spend their money. One result of the study probably would be a revision of this important index.

The problem is that, although government shoppers now check the price tag of 300 items in 46 different cities, the buying pattern is changing. A new survey presumably would disclose the extent of the change.



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IN ACTION: As general manager, Mr. Blend, at table head, is chairman of divisional advisory committee.

How to Work With Committees

By D. W. Blend-Vice Pres., Gen. Mgr., Wolverine Tube Div., Calumet & Hecla, Inc.

The committee can be one of the most valuable tools of management. But it is also subject to misuse.

Here are some of the things to keep in mind in using your management committee, to get the best results, and also avoid some of the pitfalls.

• Management's primary function is to make the best use of the abilities of the people in its organization. The greater an executive's responsibilities, the less important are his specialized skills and the more important are his skills in getting people to do their best work.

Much has been written and spoken about the various management systems. The fact of the matter is that most management systems will work if the people involved want them to work. It is not the management system that is important, but people's attitude towards the specific system.

Every system of management involves some use of committees in one way or another. In any organization it is virtually impossible to maintain communication—be it of a command nature—or of an informational nature—on a person-toperson basis, regardless of how well the chain of command is spelled out. Sooner or later, there must be a committee meeting.

Why the Committee—Working with a group of people toward the accomplishment of a common goal can be a most rewarding business experience both in terms of personal satisfaction and success in attaining an objective. But it also

is perhaps the most difficult form of managerial activity in terms of working toward a final objective.

Repeating my original premise, if you are an executive with managerial responsibility, you serve your organization best when you get the best performance out of the people working for you. If sales, purchasing, industrial relations and other functions report to you, your job is not to be the top purchasing agent or the top salesman or the lead-off industrial relations man-although you might be any one of these-but to manage and coordinate the functioning of each of these specialists so that the company does the best possible job, in the shortest possible time, at the lowest possible

The committee can be one of the most effective means of attaining these fundamental objectives. Yet,

How Committees Work at Wolverine Tube

This is the management philosophy at Wolverine Tube, as summed up by D. W. Blend, divisional manager and vice president of Calumet & Hecla, Inc., the parent company.

"Every manager, from the chief executive officer to the group foreman, can best do his job if he will seek counsel of the people who work directly for him. They are the people who do the work, and they are the people to whom he must delegate responsibility.

"On the other hand, the more opportunity each employee has to influence the decisions to be made by the manager of the group within which he functions, the greater will be his interest in the job and the more he will identify his interest with the company's." Mr. Blend, at right, is both a product, as well as one of the founders of the management committees system at Wolverine Tube.

In a period of expansion and modernization, the management committees system has helped Wolverine obtain needed management talent from within its ranks. And many of Calumet & Hecla's top executives, including H. Y. Bassett, company president, have come from the division.

The management system currently practiced at Wolverine, and now in use throughout the Calumet & Hecla organization, was developed by evolution, not revolution. Even today it is undergoing changes, as requirements change.

In the Wolverine Table of Or-

ganization, there are seven levels of managerial responsibility below Mr. Blend, the division's chief executive officer.

The top executive at each level of management, both line and staff, is chairman of an advisory committee consisting of the people who report directly to him.

For instance, the manager of the Detroit plant is a member of the divisional advisory committee, whose chairman is Mr. Blend. The plant manager, in turn, is chairman of the plant advisory committee, whose members are the factory manager, and the managers of plant accounting, purchasing and industrial relations, and so on down through the organization.

it often is not. Let us see why.

Why Committees Succeed or Fail—The success or failure of committees and committee meetings can best be traced chronologically, starting with the formation of the committee.

Why Was the Committee Organized?-Many a committee, composed of very able people and headed by a top executive, has floundered and failed - for one basic reason. The committee should never have been established in the first place. A committee meeting is no substitute for decisions that should be made by one man as a regular part of his job responsibilities. If you are involved in the organization of a committee, be sure that all understand clearly why the committee is wanted and what it will do that would otherwise be undone or done less effectively. Probably more effort should be expended on the committee at this point-when it is being organized -than at any other time in its history.

Who Should Be On the Committee?—Let's face it, there is nothing as boring as attending the meetings of a committee in which you have no interest. Membership on a management committee should be limited to those directly involved in the implementation of the functions that have been established for the committee. Further, all committee members, with one exception, should be on the same organizational level and that one exception should be the man to whom all other members report.

How Often Should Committees Meet?—A meeting schedule for a committee may seem like a minor detail. The fact is, however, it can contribute importantly to the group's success. There is no flat rule as to how often, but the choice is crucial.

If it is too frequent, the meetings will be both a farce and a burden. Too infrequently will result in a superficial handling of the committee's business to a point where it is not taken seriously.

What Is the Committee to Do?

—This question differs from "why was the committee organized?" It's like the difference between strategy and tactics. It may be very desirable to organize this specific committee—which means that the general objectives and the overall purpose are clear. If the functions and duties of the committee are not spelled out—if the tactics to be used in carrying out the strategy are not "on the record," the committee will fail.

How to Prepare for a Meeting-

A management committee meeting should not be treated as a surprise party where items for discussion are pulled out of a hat. Nor is it a brainstorming session. A detailed agenda should be prepared and circulated by the chairman at least ten days prior to the meeting. This gives committee members a chance to pull together required data, and also to suggest other items for discussion.

How to Run a Meeting—Committees are unsuccessful when their



meetings fall into a pattern of being either too dictatorial or too democratic. What is needed is a blend of the two. And this can be accomplished. Agenda items are assigned to the person or persons directly involved. The assignees handle the discussion, provide the data needed and are prepared to offer authoritative opinions. When the point of decision is reached, the chairman makes the decision. You as chairman should not only encourage, but specifically direct, each member to evaluate and comment on all of the items on the agenda. One of the basic advantages of the committee is, after all, the pooling of skills and talents.

What Happens After the Meeting—As in golf, the follow-through on the committee's meeting is as important as the meeting itself. The chairman should prepare comprehensive minutes following each meeting. They should be available on a regular fixed time schedule as soon after the meeting as possible. They should be distributed both to

committee members and to the management level to whom the chairman reports. In this way, the minutes perform an important communications function.

To sum up, here are the steps you need to take to make a management committee work:

Establish committee objectives.

Detail committee functions.

Select membership by organizational level.

Select and adhere to frequency, time and place of meeting.

Prepare agenda in advance.

Assign agenda responsibilities.

Reserve decision-making to chairman.

Prepare comprehensive minutes.

What Are the Benefits?-Let me emphasize once again that using committees in management does not mean managing by committee. An industrial organization consists of individuals, each making decisions within the area of his job responsibility. Committees in management help to improve communications between individuals and improve coordination and planning. In short, committees in management help management do its most important job-make better use of the abilities possessed by the individuals making up the organization.

Here are some of the specific benefits that can accrue to you through the committee:

Better Communications Up, Down and Within—Committee minutes are a condensed "diary" of the activities of an entire management level. The minutes plus the meetings themselves keep everybody on the same management level informed of what's going on in each department.

By reading the minutes, the next managerial level has a good grasp of the progress being made in every aspect of company business. Committee members can also use the minutes as the basis for briefing the people they supervise. Better Program Coordination— There is no program, be it short range or long range, that does not affect other departments in addition to the one initiating the program. Because all groups are brought together on a regular basis to review

gether on a regular basis to review all activities, it is possible to do a better, more meticulous, job of planning and executing a specific

program.

More Effective Management— Because each man on the committee is fully informed in his area of responsibility as well as in other areas of the company—and has a good grasp of management thinking and objectives, his decisions on a day-to-day basis will be sounder and made more promptly.

Creative Stimulus—A variety of points of view, experience and background are brought to bear on each problem under discussion. The result is a flow of new ideas and approaches that would otherwise not be available.

Stronger Company Identification
—Through the management committee, each member develops a greater and more personalized identification with the whole organization. This results from the fact that each committee member plays some role in the formulation of company policy.

A man is not restricted to thinking solely about his own job and department, but is asked, even instructed, to offer comments and suggestions on the plans and activities of every other department.

Develops Managerial Talent— The committee acts both as a training ground for future managers and as a means of selecting those who would make the best managers. Over a period of time, those gifted with managerial ability soon become more apparent.

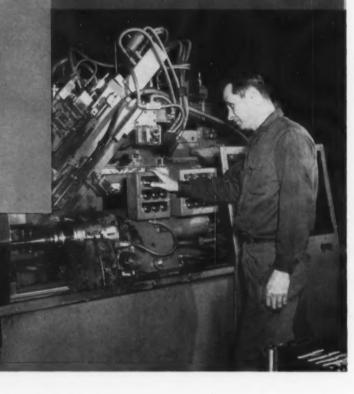
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More Glass Coming for New Cars

Trend to Larger Windshields and Windows Continues

Automakers show no signs of halting emphasis on wrap-around windows.

The industry is split on which safety glass is safest for autos.

—By H. R. Neal.

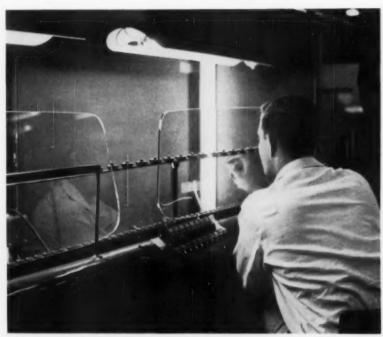
■ The trend of recent years toward greater use of glass in automobiles shows no sign of slowing down. A tip-off came from Ford Motor Co. officials at the dedication of Ford's new Nashville, Tenn., glass plant.

Irving A. Duffy, vice president, revealed some cars produced by his company will sport windshields which sweep not only around sides but into the roof line as well. As one example he pointed to the compound-curved windshield to be used in 1959 Mercury passenger cars. It will be 61 pct larger than a windshield in 1958 models.

Vinyl Tinting—As another example, Mr. Duffy said glass area in the 1959 Ford windshield will be increased 277.9 sq in. over the current model. Rear glass area in forthcoming Ford station wagon models will be increased 285.8 sq in.

The Ford executive also commented on possible future glass developments, including an improved method for making tinted glass by using colored vinyl as the middle layer of laminated safety glass. Studies are also being conducted, he said, with vinyl containing an ultraviolet absorber to reduce sun rays which cause upholstery to fade,

A Major Producer—The one million sq ft Nashville plant was completed last fall with capacity to turn out about 400 tons of plate and sheet glass daily. Glass is processed into more than 40 sizes and shapes



WINDOW INSPECTION: Back window pieces are checked by inspectors at Ford's new Nashville, Tenn., glass plant. Minor defects are either ground or polished out. Larger flaws consign the piece to scrap.

for use in passenger cars and trucks.

Ford, the only automotive firm to produce its own glass, also manufactures glass at its Rouge plant in Dearborn, Mich. With the two plants, Ford is the fourth largest glass producer in the United States and the third largest maker of plate glass.

Opinions Differ on Use — As Ford's Mr. Duffy indicated, there will be more glass in 1959 model cars. This goes for other automakers as well. General Motors will introduce compound-curved windshields on its cars. Chrysler introduced the double wrap-around glass in 1957 on some of its cars, then increased

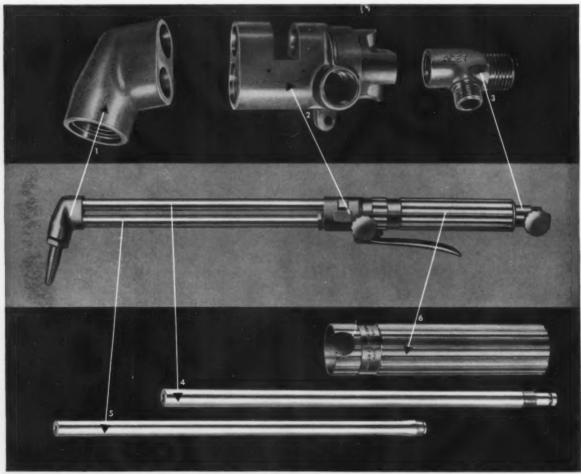
number of models on which it was available this year.

While automakers are agreed on using more and more glass each year, they are not in harmony over the type of glass to be used—at least for some applications. Basically, there are two types of automotive safety glass in general use—laminated plate glass and tempered glass, but their properties differ widely.

How They're Made—Laminated glass consists of a plastic interlayer sandwiched between two layers of glass. It maintains good transparency despite fracture and the inter-

SHORT CUTS to finished products.

Anaconda pre-formed mill products cut time and cost in finishing and machining—reduce scrap losses.



Linde Company's "Purox" Cutting Blowpipe, Type "E," is produced more easily and economically with these Anaconda products. 1, 2, 3. Die-pressed forgings, with these advantages: twice-wrought metal has denseness to prevent gas leaks; toughness and strength to stand up to abuse; has uniformity, dimensional accuracy to cut machining cost—finishing re-

duced to bright dip. 4, 5. Thick-wall tubes of Ambrac-850 alloy to dissipate heat rapidly, prevent overheating and "flashback"; alloy has high strength for rough service, yet has sufficient machinability. 6. Special-shape brass tube with fluting pre-formed is furnished in long lengths ready for fast, economical screw machine operation.

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products made by
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Automotive Production

WEEK ENDING	CARS	TRUCKS
July 5, 1958	33,840	7,442
June 28, 1958	92,277	16,736
July 6, 1957	73,682	14,051
June 29, 1957	125,090	24,091
TO DATE 1958	2,242,039	446,252
TO DATE 1957	3,370,941	574,034
*Preliminary	Source: War	d's Reports

layer tends to hold pieces together. Within the ordinary operating temperature range, the plastic layer tends to stretch and yield before allowing break-through.

On the other hand, tempered glass is much stronger than laminated glass of comparable thickness. It normally survives blows which will extensively crack laminated glass and cause glass chips to flake off its opposite surface. When it does break, tempered glass tends to fracture completely into kernel-like particles rather than large pieces.

Side Window Issue—Currently, there is no disagreement on which glass to use for windshields and backlights, or rear windows. Because of the desirability of maintaining maximum visibility despite breakage, laminated glass is specified for windshields in the American Safety Code for Motor Vehicle Glazing. Most manufacturers use tempered glass for backlights and small wing windows.

However, it is the side windows that form the issue: Which glass is safer to have as side window material in an accident? Or, should the type of safety glass used make any difference?

Where They Stand—As yet, the answer to these questions is largely a matter of point of view. Glass makers aren't in agreement. Libbey-Owens-Ford favors laminated glass; Pittsburgh Plate Glass favors tempered glass. Each manufactures and sells both kinds to the auto industry. Among the automakers, Ford and General Motors use laminated glass for side windows; Chrysler uses tempered.

Automotive Crash Injury Re-

search department of Cornell University Medical College has just issued a preliminary report on the subject of which glass is more likely to produce injury. The crash study group is partially supported by both Ford and Chrysler.

Injury Rate Low—In the report, John O. Moore, director, was careful to point out the study was "necessarily of an exploratory nature," as there wasn't sufficient data to perform the "controlled experiment" type of study which constitutes an ideal means of comparison. However, the study covers 715 cars of four makes manufactured during the years 1946 to 1957.

Among the 715 cars, 251 or 35.1 pct had some type of damage to side window glass. However, of the 1284 injured occupants, only 2.1 pct had injury which could be associated with side glass—27 persons, Mr. Moore said.

The Breakdown — Laminated glass was more frequently damaged than tempered glass, according to the study, when compared with spe-

cific locations in the cars, or according to the total number of glass sections observed.

Of the 27 injuries associated with side window glass, 21 were minor in nature and six were of a "moderate" degree. Among the 21 injuries, 20 were associated with laminated glass and one with tempered. The six "moderate" injuries were all associated with laminated glass. All but one of the injuries were of the lacerative type—a concussion.

Conclusions—Because of the limited amount of data, Mr. Moore made only two interpretations. "When glass damage occurred, observed injuries were associated with laminated rather than tempered glass."

And, "When glass damage occurred, the hazard presented by each glass type affected only a small portion of car occupants and consisted primarily of lacerative injuries."

While the study was admittedly prompted by Chrysler, it serves to show there is still room for improvement in safety glass.

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Get acquainted with the new features incorporated in CINCINNATI FILMATIC No. 2 Centerless Grinders! You'll find that these machines now have a higher cost-reducing potential than ever before. I Grinding wheel truing controls are located directly below and at the rear of the unit, right where the operator stands when truing the wheel. Short operators will like the adjustable ejector limit switch*, which ejects the work when using a partial arc of infeed lever movement. Also, new cutting fluid control and nozzle for work . . . new cutting fluid control for diamond . . . bed 5" longer for ample support of new truing units...both swivel adjusting screws (for correcting taper in work) located on front of machine. These new features and advantages are in addition to the reliable standbys such as FILMATIC grinding wheel spindle bearings; anti-friction infeed slide; infinitely variable regulating wheel speeds, and many more. Get a copy of catalog No. G-644-4, and you'll see why cincinnati filmatic No. 2 Centerless Grinders are the finest machines available for your new equipment program.

*extra with automatic ejector

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Cincinnati Filmatic no. 2



Anti-friction bearing slide, one of the biggest improvements in centerless grinding within the past few years, eliminates stick-slip and scoring.



Grinding wheel truing unit incorporates several features of high-quality construction, including bellows dust guard to protect the ways and hydraulic motor to actuate the unit.



FILMATIC grinding wheel spindle bearings just never wear out or require adjustment.



CINCINNATI°

CENTERTYPE GRINDING MACHINES - MICRO-CENTRIC GRINDING MACHINES CENTERLESS GRINDING MACHINES - ROLL GRINDING MACHINES - SURFACE GRINDING MACHINES - CHUCKING GRINDERS - CENTERLESS LAPPING MACHINES

Will Credit Curbs Be Revived?

As an anti-inflation move, the Administration may ask renewal of credit curbs.

But opposition from hardpressed industries should halt the move.—By G. H. Baker.

 The Administration's growing concern over the inflation that's coming next year is bringing on a new White House demand for power to regulate consumer credit.

Here's why: Treasury experts calculate the government will run more than \$12 billion in the hole during the next 12 months. The deficit will have to be made up by borrowing. This means another round of inflation.

Clamp the Lid—To control it, they propose to put the lid on the amount of debt that consumers can run up. The whole object is to slow consumer spending.

It's very doubtful if Congress will buy this credit-curb plan. Merchants insist that consumer debt is not over-extended. And auto dealers certainly can be expected to protest strongly any kind of federal regulation that might slow purchases of new or used cars. Business is bad enough now, they point out. A federal rule requiring cars to be paid for in 18 months or even two years would cause grave harm to sales.

Teletype Rates Up?

Rates for leased teletype circuits, used by many business firms, may go up.

The American Telephone and Telegraph Co. and Western Union have both submitted proposal to the Federal Communications Commission for increases in teletype rates. AT&T is seeking an interim increase of 35 pct in rates on private line teletype circuits. Western Union

wants an average of 41 pct more in rates for similar services.

The proposals were submitted at the request of the Federal agency as part of an investigation of all telephone and telegraph rates and regulations which started in 1955.

DPA Extended

The Defense Production Act, now only a skeleton of a once-sweeping law, will continue in effect for another two years.

Congress, with little discussion, approved a two-year extension of the act, which now contains "emergency" powers permitting priorities for defense contractors to secure hard-to-get raw materials and metals and permitting the government to guarantee loans for expansion of necessary defense facilities.

Stockpiling authority is still contained in the law, but has now dwindled to almost nothing.

More to Come for Adams, And More Believe "Sherm Must Go"

• Clamor from Republican leaders for Sherman Adams to quit is to grow, not subside. Here's why: The leaders have had an inside peek at what's to come in the way of embarrassing investigations during the next four months. And they're mightily upset over what's in the offing.

What the Democrats plan to pin on Adams in the weeks just ahead is no worse than the dirt uncovered up to now, but it's there and it can't be swept under the rug.

Angered by Ike—Many congressional Republicans are privately

furious at Ike for his failure to dump Adams.

But Ike can be stubbornly loyal to his friends, and the politicos fear Sherm is going to hang onto his \$25,000-plus-expenses job.

It's all part of the over-all pattern of pessimism in Republican circles these days. Even party stalwarts are in open despair over their chances to gain a majority in the Senate and the House. If the GOP takes a trouncing at the November elections, you can expect Republicans in Congress to be in open revolt against Ike for the final two years of the present White House term.



Sherman Adams



In curtain wall framing, welded steel tubing fabricates readily—joins easily—saves weight.



As conveyor rollers, miles of welded steel tubing are used each year for simplified fabrication, rugged strength and light weight.



Square carbon steel tubing creates a highly efficient load-bearing curtain wall in this new school design.



Easy to fabricate, easy to join, brute strong and light weight, welded steel tubing makes up this entire crane boom.

The strongest load-bearing section you can use!



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The tubular form is engineering's most efficient structural section—and welded steel tubing offers in addition the greatest uniformity and formability of them all.

Welded tubing is concentric about its axis, uniform in wall thickness, readily formed to any cross section and available in many grades from low carbon through stainless steel.

When you have a structural problem requiring high strength-to-weight plus dependable uniformity—contact your quality welded tube producer.

COMPLIMENTARY TECHNICAL HANDBOOK

260 fact-packed pages of design data for Welded Steel Tubing. For your copy write on your company letterhead and give your title.



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Jet Transports Will Move Fast

Speeds of 1500-2000 MPH Expected in 1960's

The 600-mph DC-8 jetliner won't be in service until next year.

But already its maker, Donald Douglas, believes it may be last of its type.

He predicts later commercial jets will travel at ten times its speed—By R. R. Kay.

 You may soon be flying New York to Los Angeles in 1½ hours or New York to London in 2 hours.
 Sounds fantastic, but it's true.

Things are happening fast in the aviation industry. So fast that its science is racing along at supersonic speeds. Forecasts of a few years ago we now know were too timid.

Ten Times as Fast—So don't be surprised when you read that Douglas Aircraft has a 1500 mph airliner. And a prototype could fly within two years. Lookheed Aircraft says it can put a 2000 mph transport into the air in the '60's.

In fact, Donald W. Douglas believes that his 600-mph DC-8 jetliner (in service next year) may be the last of its type. And looking ahead a few years, he says the next generation of transports may be rocket- or nuclear-powered. They'll fly at speeds 10 times as fast as the DC-8.

Into the Thousands—Lockheed's senior vice president Hall Hibbard predicts a commercial airliner that will fly at 2000 mph in the "glorious 60's". "At Lockheed we are really dead serious about it. Such an airplane could be started next year. The prototype would fly in three years. Oddly enough, about 1000 mph presents just as many problems,

so we aren't even thinking about such a relatively low speed," he says.

Space Glider Still Five Years Away

The man-carrying space-glider, the Dyna-Soar, won't be flying soon. It will take five years.

Boosted into the air by powerful rockets, Dyna-Soar (name is short for dynamic soaring) would orbit the earth like a satellite, and make a conventional plane landing on its return. Its orbit speed: 17,000 mph.

Boeing Airplane Co. and Martin Co. have a development contract for the space glider. Both companies

will head competitive teams for its development. However, the production contract will go to one only.

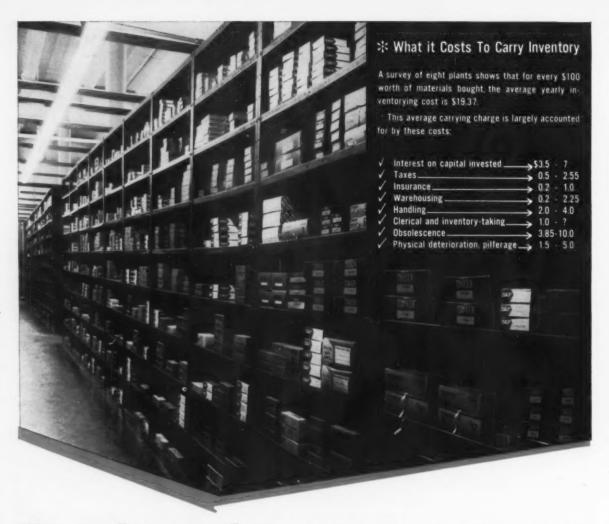
Who's Involved—This project may turn out to be one of the Defense Dept.'s biggest pieces of business. It's estimated that each Dyna-Soar will cost \$150 million—with \$5 million set aside for research and development during fiscal 1959.

In the Boeing team are: Aerojet-General, Chance Vought Aircraft, North American Aviation, Ramo-Wooldridge, and General Electric. And teamed up with Martin are: Bell Aircraft, American Machine & Foundry, Bendix Aviation, Goodyear Aviation, and Minneapolis-Honeywell Regulator.

Getting Wet for Aircraft Science



UNDERWATER TEST: Douglas Aircraft engineer, in skindiving gear, inspects fuselage of DC-8 jetliner during extensive hydrostatic test program.



Bearings, Inc. can cut your costs on bearing inventory... 2 ways!

Inventory costs soak up a lot of dollars that could do much more for your company in other ways. We now perform inventory cost-cutting services for many of our customers and are ready to do the same for you.

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bearings you actually require and we keep this record up-to-date.

Second, you keep in inventory only a minimum number of bearings to take care of emergencies. Bearings, Inc. guarantees that the branch nearest your plant will stock all the bearings shown on your survey, ready for immediate delivery day or night!

Call or write for a Bearings, Inc. sales engineer to discuss this important, money-saving program NOW! Check our branch locations for the one nearest you.

*Reprinted from THE IRON AGE, September 12, 1957.

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How to Modernize Maintenance

Vickers Forum Points Way to Plant Upkeep Savings

To get a preventive maintenance program into operation takes planning and work.

But once under way, it offers tremendous savings in downtime, labor.—By E. J. Egan, Jr.

• U. S. industry pays a staggering price to maintain its plant equipment in operating condition. According to George C. Bonnell, service manager of Vickers, Inc.'s Machinery Hydraulics Div., it's "upwards of \$11 billion a year."

"Maintenance without preventive measures is costly," he told visitors to Vickers' recent Third Production Machine Tool Hydraulic Forum. "But a well planned and closely followed program of preventive maintenance is a money making proposition."

One Plant's Experience — To prove his point, he cited a Southwest firm that realized its need for a preventive maintenance program in 1951. At that time, the company had a 980,000 sq-ft plant, operated 600 machine tools, employed 353 maintenance workers on an hourly basis, and used 300 of these men at premium wages on an average Saturday to get machines in shape to run the following week.

Operating on a "when-it-breaks-down-fix-it" plan, repair downtime averaged nine per cent of scheduled work hours for the 600 machines. Emergency work took up 85 pct of the total man hours put in by the maintenance staff.

Seven Years Later—Now look at the changes wrought in seven years. Today, the plant occupies 1,325,000 sq ft and runs 800 machine tools, a hefty gain in both categories. The present staff of maintenance hourly employees, however, numbers only 369, just 13 more to handle 200 more tools.

And here's a significant fact: Preventive maintenance has cut Saturday work way down. It's handled by only 35 men who constitute a minimum shutdown crew. They also do occasional work which, by its nature, cannot be done during the week.

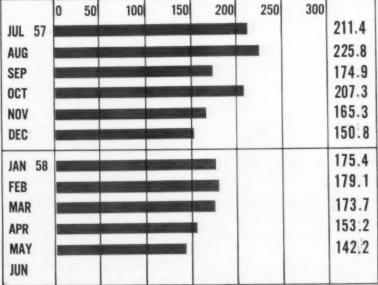
Planning the Program—The firm started its preventive maintenance program by accumulating reference data and service manuals on all machine tools and components. It set up a rigid schedule of inspection and lubrication and standardized on lubricants. The next step was to keep accurate records of service, repair and replacement history on each piece of equipment. From these records came an analysis of repetitive failures and a long range equipment rebuilding program. Work was scheduled into the maintenance machine shop and a backlog maintained.

Responsibility Fixed—As a result of analyzing every phase of maintenance, responsibility and control of maintenance stores was also firmly established.

"This example of a planned program clearly shows the effects that reduced maintenance cost has on the end result of manufacturing effort," Bonnell said. Good programs mean bigger profits, he added.

GEAR INDEX 1957/1958

Base 1947—49=100



Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Propjet Contract—The first production contract for a small U. S. propjet engine is in production by Lycoming Div., Avco Mfg. Corp. The Air Force-Army contract, totaling about \$6 million, calls for delivery of Lycoming T53-L-3 engines starting in Nov. 1958. Lycoming has already received a contract for \$1.8 million from the Air Material Command.

Into the Suburbs — Bohanan Mfg, Div. of The Gabriel Co. will build a new office-manufacturing plant on a 13-acre site in Compton. Calif. Present operations at the Bohanan plant in Los Angeles will be discontinued. The Bohanan Div. is a manufacturer of force ejection systems for the missile and aircraft industries.

Retires from Rust — Dwight S. Ewalt, vice president of Rust Furnace Co., has retired after 31 years of service to this subsidiary of The Rust Engineering Co., Pittsburgh. Mr. Ewalt is a leading authority on the design, engineering and construction of different types of fuel-fired furnaces in the melting, reheating and heat treating fields.

Down Argentine Way—DEMAG, of Duisburg, Germany, has been awarded contracts to supply blast furnace equipment and complete installations for a steelworks and rolling mill plant at the Zapla Works in Argentina.



"Just remember, dear, that whatever happens, you still have me."

New Location—Beckman Instruments, Inc. has sold its Helipot Div. plant at Newport Beach, Calif. It will result in the removal of Helipot personnel, production and e q u i p m e n t to newly-expanded facilities at Beckman corporate headquarters in Fullerton, Calif.

New Owners — Koehring Co., Milwaukee, manufacturer of heavy construction equipment, has purchased the business of Ka-Mo Tools, Inc., Cicero, Ill. Purchase included the right to use the Ka-Mo Tools' name. Ka-Mo Tools has an annual sales volume of about \$2 million.

Piping for Power—The Power Piping & Sprinkler Div., Blaw-Knox Co., Pittsburgh, has a \$300,000 contract for the fabrication and installation of all piping for the new 22,000 kw addition to the Mc-Williams steam power plant of Alabama Electric Co-operative, Inc., at Gantt, Ala.

Order the Champagne—The kecl for the second of two new bulk cargo carriers for The Interlake Steamship Co. was laid on June 25 at the Great Lakes Engineering Works, River Rouge, Mich. Now designated as Hull 302, the ship is scheduled to enter service during the 1959 navigating season.

Clearer Picture—General Electric Co.'s Technical Products Dept. has announced commercial production of a new transistorized synchronizing generator for television stations. The new device is said to permit more precise synchronizing of TV programs between studio camera and home receivers.

For Battle of Washington — Arvid O. Lundell, president, Colonial Broach & Machine Co., Detroit, received a certificate of merit from H. B. McCoy, Administrator of the Business and Defense Services Administration, U. S. Dept. of Commerce, in appreciation of his recent six months service as an advisor to the Director of the Metalworking Equipment Div., Niels A. Olsen.

Oxygen for Phoenix — A new oxygen generating facility is now in operation serving the Phoenix Iron & Steel Co., subsidiary of Barium Steel Corp., at Phoenixville, Pa. The facility supplies high purity oxygen for economical surface preparation of ingots.

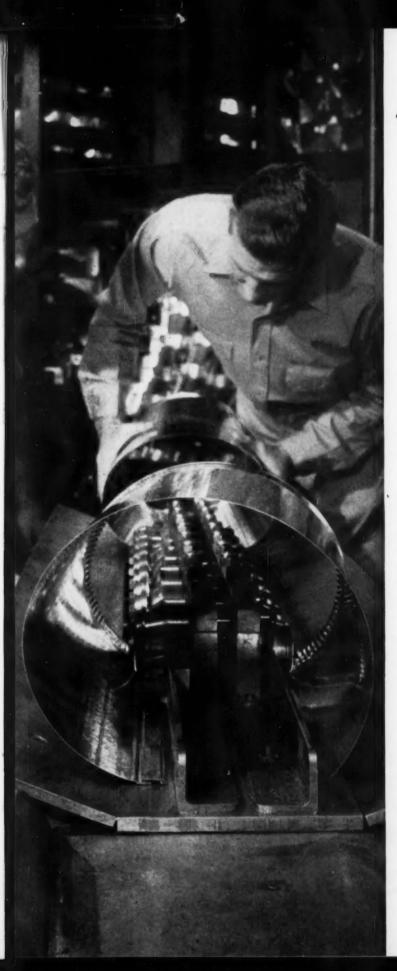
And for Acme — Acme Steel Co.'s new oxygen generating plant is now underway. The plant will supply a new steelmaking process beginning early in 1959. The facility, designed, built and operated by Air Products, Inc., Allentown, Pa., will provide a constant stream of pure oxygen for the new, top blown oxygen conversion process.

Controls Purchase—Controls Co. of America, Shiller Park, Ill., has acquired Redmond Co., Inc., Owosso, Mich., and Redmond Motors, Ltd., of St. Thomas, Ontario. Acquisition was through purchase of their inventories, tooling, patents and trademarks for about \$1.7 million, and the leasing of plants, equipment and other fixed assets.

Clearing the Air — Pittsburgh Coke & Chemical Co.'s reconstructed No. 2 battery of 35 coke ovens at the Neville Island plant was lighted on June 26. This was another major step in its continuing program to alleviate air pollution.

On Instruments—Graybar Electric Co. and Consolidated Electrodynamics Corp., Pasadena, Calif., have signed a non-exclusive distributor agreement authorizing Graybar to stock and market CEC's Alectra line of portable test instruments.

ASTM Award—R. A. Lula and W. G. Renshaw, of the Research and Development Laboratory of Allegheny Ludlum Steel Corp., have been named joint winners of the Sam Tour Award of the American Society for Testing Materials. Their prize winning paper was entitled, "Corrosion Properties of the Chromium - Nickel - Manganese Austenitic Stainless Steel."



"We just don't worry
about chipping
or flaking
when we lock-seam
WEIRKOTE"!"

If those difficult lock-seaming operations give you trouble, it's time to take the step that fabricator after fabricator is taking.

Switch to Weirkote zinc-coated steel as promptly as you can.

Weirkote's continuous process integrates the zinc and the steel so that the most complicated forming operations are made without chipping or flaking. Weirkote can be worked to the very limits of the steel itself—spinning, deep drawing, crimping, heading, twisting, the works. Comes through in perfect shape to give your products lasting anti-rust protection, such as they've never had before.

Can you think of a quicker, easier step to an even better product? To fewer rejects? To more peace of mind? To lower costs? And, perhaps most important, to the greater good will of customers who receive even more value for their money?

Write today for the free booklet that will give you lots of food for thought on the many advantages Weirkote can bring to your products and production. And now Weirkote is treated to inhibit wet storage (white oxide) stain. Weirton Steel Company, Dept. A-1, Weirton, West Virginia.



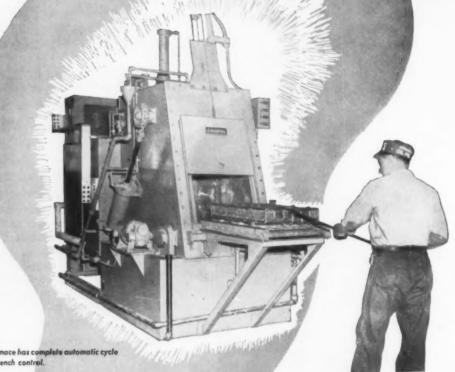
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Here's the work-horse for many a carbonitriding job



This furnace has complete automatic cycle and quench control.

This is the most widely-used carbonitriding furnace of all. Day in and day out production of tons and tons of work has proved this furnace's ability to increase production quality and volume and reduce costs. It is a versatile furnace, too, not only for carbonitriding but for other uses, carburizing, annealing, carbon restoration and many hardening applications.

This type of furnace is available for both manual and automatic operation. It can be equipped either with Lindberg's efficient new vertical radiant tubes for fuel-firing or for electric heating with Lindberg's revolutionary new CORRTHERM element.

Versatile as this furnace is, we don't claim it is the best solution to every carbonitriding problem. But, whatever your need may be, talk it over with Lindberg. Our engineers, as they have done in so many instances, will recommend a sound answer-design it, build it, even field-install it if you wish. Just get in touch with the Lindberg plant or the Lindberg Field Representative in your locality. Lindberg Engineering Company, 2452 West Hubbard St., Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Ave., at Downey, California.





. W. W. Harris, appointed vice president, marketing, Roots-Connersville Blower Div., Dresser Industries, Inc., Connersville, Ind.

- E. L. Casey, elected president, and F. J. Lantry, will become chairman of the board and chief executive officer, M. H. Treadwell Co., Inc., New York.
- H. G. Ingersoll, Jr., elected president and general manager, Ingersoll Steel Div., Borg-Warner Corp.
- **F. A. Brinker,** appointed asst. vice president, Vanadium Corp. of America.
- C. O. Strother, appointed vice president, research, Union Carbide Nuclear Co., Div. of Union Carbide Corp.

Werner Pflug, appointed vice president, National Carbide Die Co., McKeesport, Pa.



J. J. Basch, appointed marketing vice president, Oakite Products, Inc., New York.

A. L. Knapp, vice president and manager, Machinery Div., and E. J. Shages, vice president and manager, Cutting Tool and Gage Division, will head up sales of their respective operations.

J. P. Cartwright, elected vice president and general manager, Industrial Div., Joy Mfg. Co., Pittsburgh; J. Y. Richards, appointed sales manager, Industrial Div.

E. R. Janes, elected vice president, manufacturing, Chemway Corp., Wayne, N. J.

J. L. Bell, named asst. treasurer, The Cornwall & Patterson Co., Bridgeport, Conn.

A. L. W. Williams, elected vice president, Clevite Corp.

R. H. Colin, appointed director, production chemistry, U. S. Steel Corp.

J. T. Hughes, appointed sales manager, New York sales territory, Universal Atlas Cement Co.

W. M. Kay, appointed sales manager, Philadelphia area, Republic Mfg. Co., Cleveland.

R. D. O'Connell, named supervisor, union relations, Baltimore, Md., Works, Armco Steel Corp.



J. B. Sewell, appointed president, The Garlock Packing Co. of Canada, Ltd.



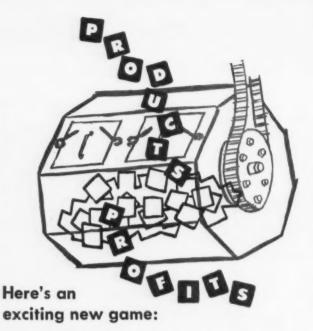
E. J. Tangredi, named director, monumental and general construction sales, Reynolds Metals Co., Richmond, Va.

- **J. D. Taylor,** appointed director, plant protection, General Motors Corp.
- **D. E. Bockover,** appointed manager, media, Westinghouse Electric Corp.

Following appointments are within the Michigan Div. of Revere Copper & Brass Inc., Detroit. G. J. Gamber, manager, merchandise sales; Weston Jenkins, manager, industrial sales; J. M. Walker, manager, aluminum sales.



E. G. Bowerman, Jr., appointed sales manager, Bearings, Inc., Cleveland.



PUT your products in the barrel **TAKE** your profits out

One of the greatest money-saving opportunities in metalworking lies in the use of barrels to finish parts by the hundreds in place of conventional methods that finish one part at a time.

Barrel finishing makes easy work of many tough jobs of grinding, deburring and buffing by wheel.

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Technical Service Representatives in Principal Cities of U.S. and Canada

P. C. Bailey, named manager, sales and manufacturing, Brass Div., Bohn Aluminum & Brass Corp.



P. L. Tietjen, promoted to general manager, Traffic and Transportation, Jones & Laughlin Steel Corp., Pittsburgh.

- **D. P. Wroten,** appointed district manager, Southeastern territory, W-S Fittings Works, Forge and Fittings Div., H. K. Porter Co., Inc.
- J. W. Holzwarth, appointed manager, Western district office, Santa Ana, Calif., The Electric Furnace Co., Salem, O.



C. F. Coombs, named manager, Traffic and Transportation Div., Jones & Laughlin Steel Corp.

- E. W. Menke, appointed manager, tool and plant engineering, Edward Valves, Inc., E. Chicago, subsidiary of Rockwell Mfg. Co.
- D. H. Mooney, appointed asst. manager, sales, Philadelphia dis-



CUTS COSTS

EXCLUSIVE IN DOALL SAFETY CENTER DRILLS

Here's why costs take a tumble with these new DoALL Center Drills:

Radial Type—This new precision-ground curve now eliminates the old fatigue point found in standard drills—the familiar sharp notch where the 60° angle meets the drill portion. This new radius angle provides greater strength and gives tip clearance to the drill portion. This provides the ultimate in minimizing breakage. Corners are automatically deburred. It also reduces friction between lathe center and work...provides a larger oil reservoir. Center grinding is eliminated on hardened parts. Lapping is fast and easy.

Heavy-Duty Type—Cuts an entirely new type of burr-free center. An 82° ground top angle forms a cutback edge. There is a slight radius where the 60° angle meets the drill portion—no sharp notches! Provides a larger bearing surface for heavier parts as compared to the radial type.

Think of it! These longer-lasting, faster-cutting DoALL Safety Center Drills cost no more than the old plain type—and actually cost 10% to 15% less than ordinary bell types.

That's why more and more alert men have changed to DoALL. Try it—and see the difference!



Only DoALL offers ALL these features:

- · Less drill breakage
- · No fatique point
- · Greater drill strength
- . Higher cutting efficiency.
- · Resharpenable.
- · Perfect work centering

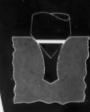
—PLUS still more cost-cutting opportunities:

Deburring eliminated

Center grinding eliminated

Lathe-center damage

eliminated



Radial Type Drilled Hole



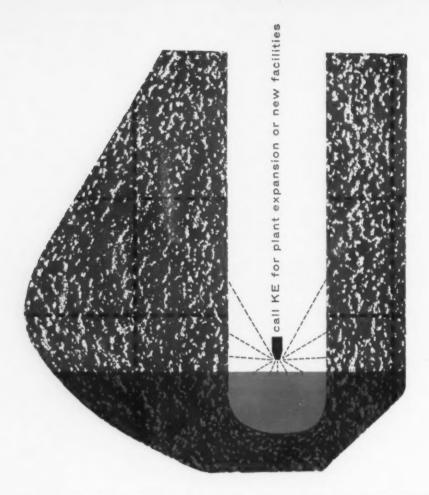
Heavy-Duty Type Drilled Hole



money through low-cost, nationwide distribution. —Danny DoALL







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L-D process plant similar to that installed by KE at a major eastern steel plant.

Design and construction of over 2,000,000 tons of oxygen steel making capacity. Intimate familiarity with oxygen steel technology in all parts of the world. A pioneer's experience in applying tested techniques of steel making. U.S. licensor for the proven L-D process-also P.T. Oxygen Guns for present and planned open hearths.

These are reasons why Kaiser Engineers is uniquely qualified to develop your oxygen steel program. Another reason is traditional KE ingenuityengineering and construction ingenuity which means your steel facilities will be completed more quickly, at lower cost, and operate more efficiently.

Economic analysis, plant location, engineering, design, procurement, expediting, construction-KE does one or all. With your first thought of new steel producing facilities-call KE.



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- Versatile
- Efficient
- Economical
- Compact

The versatility of the Falk Shaft Mounted Drive makes it the practical choice for many machines in your plant.

This compact unit mounts on the driven shaft, thereby solving many problems of restricted space. You can obtain almost any output speed between 420 and 5 rpm by selecting

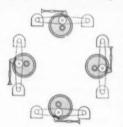
> the proper single or double reduction unit and the proper sheave or sprocket ratio.

Do you need both horizontal and vertical drives? Standard Falk Shaft Mounted Drives are available for either application; or you can easily convert a horizontal unit to a vertical unit, right in your plant. Initial cost is low, you get immediate delivery from shelf stock, and installation is quick and easy.

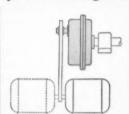
FALK Shaft Mounted Drives are available from factory and distributor stocks from coast to coast. See your Falk Representative or Distributor-or write direct for your copy of Bulletin 7100.

SEVEN SIZES-1/2 to 50 HP-420 to 5 rpmsingle and two double reduction ratiosoutput torque ratings up to 31,500 lb-in.

A few of the many ways this reducing unit can be applied-



ANY POSITION



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VARIABLE SPEEDS... through use of variablepitch sheaves — automatic belt adjustment with tie-rod adjustment



OVERLOAD RELEASE... that will slacken belts and cut off power if overload



INCLINED SHAFT... Any standard unit can be mounted in vertical or inclined position by a simple rearrangement of oil drains

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- Single Helical Gears Herringhone Gears
- Marine Drives Steel Castings
- Weldments
- Contract Machining

...a good name in industry

trict sales office, U. S. Steel Corp., Philadelphia.

John Nash, appointed sales manager, Progress and Monitor Boiler Div., Cleaver-Brooks Co., Milwaukee.

D. V. Sarbach, named director, new products development, Goodrich-Gulf Chemicals, Inc., Cleveland.



J. W. Belanger, appointed general manager, General Electric Co.'s Apparatus Sales Div., New York.

H. S. Davis, appointed sales manager, DataTape Div., Consolidated Electrodynamics Corp., Pasadena, Calif.

Harris Shapiro, named asst division manager, engineering, Electro Dynamic Div., General Dynamics Corp., Bayonne, N. J.



K. B. Wood, Jr., appointed asst. manager, lubricant development, Climax Molybdenum Co., Div. of American Metal Climax, Inc.



W. E. Walton, named director, engineering, DeWalt Div., American Machine & Foundry Co.

J. R. Jones, appointed manager, Army Contracts, Ford Instrument Co., Div. of Sperry Rand Corp.

Eugene Ransom, appointed general manager, Industrial Hose Div., Flexonics Corp., Maywood, Ill.



J. R. Wall, named general traffic manager, Republic Steel Corp.

OBITUARIES

J. H. Kincaid, 64, chief engineer and asst. vice president, Wellman Engineering Co.

J. H. Flavell, 66, president and treasurer, W. O. Barnes Co., Inc., Detroit.

P. H. Van Osdol, 50, asst. service manager, Allis-Chalmers Mfg. Co.'s Construction Machinery Div.

R. M. Barr, 58, manager, Ohio shops district, The National Supply Co.

How to measure

Now is the time to take a long, hard look

A continuous furnace is more than just a brick-lined structure built to heat a material; it is a processing tool.

Like all processing tools, it must be evaluated on an overall basis. Fuel consumption and efficiency may be completely outweighed by many moreimportant economic factors centering around your workpiece, your total production program, and your work force.

Your evaluation may well prove that an investment now in Selas continuous heat processing will bring immediate returns in reduced costs and improved product quality.

To help you take this long, hard look at your heat processing equipment or requirements, Selas offers these 15 evaluation factors:

- Work in process
- Material handling
- Product value
- Product quality
- Production requirements
- Process coordination
- Automatic operation
- Temperature control
- Labor requirements
- Fuel efficiency
- Maintenance
- Equipment flexibility
- Material saving
- Human element
- Floor space

The factual report on the facing page tells how a steel mill took this long, hard look at its heat treating operations. All evaluation factors proved important: several represented significant savings!



the real cost of automatic heat processing

... here's how one SELAS installation stands up under that "long, hard look!"

High speed heating furnaces, designed to meet the demands of high speed production, have become an improved processing tool for the steel industry.

Heating die blocks for hardening is no longer a 20-30 hour operation at this steel

A completely automatic program-control heating method designed and built by Selas increases heating rates 5 times, reduces the cycle to 3-4 hours for work loads up to 20 tons.

The installation is the outgrowth of a search for a heating method that would enable the mill to keep pace with increasing production requirements without undergoing costly plant expansion.

The entire furnace was prefabricated at Selas and, within one week of delivery, production tests were under way.

Work in Process

The one Selas furnace handles as much tonnage as 5 conventional furnaces of same size. For a given rate of output, work in process in Selas furnace is ½ that required by conventional heating.

Material Handling

The ability to process increased tonnage in shorter time in one furnace contributes to more efficient use of handling equipment

Product Value

Value of material processed in only six turns exceeds the cost of the furnace!

Product Quality

This furnace successfully treats large sections of hard-to-harden steels. A typical analysis is 0.50 carbon, 0.70 manganese, 0.04 phosphorus, 0.04 sulphur, 0.25 silicon, 0.85 chromium, 0.04 molybdenum and 0.06 vanadium.

Production Requirements

The Selas furnace meets increasing production demands for die block hardening without expanding plant facilities. This fast heating furnace has become primary source of die block heating with twelve other conventional furnaces being used to supplement production needs.

Process Coordination

The Selas furnace makes possible close adherence to a tight production schedule resulting in overall plant efficiency. Manpower, crane and quench facilities are effectively utilized.

Automatic Operation

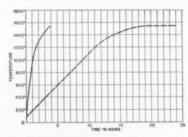
Fast response of this Gradiation® furnace permits accurate automatic control of die block temperature. Cams set temperature cycle to meet heat requirements in terms of thickness of die blocks.



24,000 pounds of fast-heated die blocks leave Selas car-bottom furnace. Fast heating furnace outproduces 5 conventional furnaces of same size; eliminated need for new heat treat building.

Temperature Control

Heating is completely automatic, the temperature being regulated by preset program-control. Uniform heating by radiant gas fired Duradiant[®] burners permits drastic reduction of heating cycle. Curves compare heating rates for center of die



block in Selas furnace (solid line) with conventional long heating cycle (dashed line). Temperature readings in °F.

Labor Requirements

Process requires minimum attention. About 20 min of an operator's time is all that is needed over an entire heating cycle.

Fuel Efficiency

Total fuel cost, something under \$2.00 per ton, is actually \(^{1}_{00}\) of the product value of a single furnace charge, Furnace uses

20% less fuel per ton of steel heated than conventional furnaces.

Maintenance

Practically none in 4 years.

Equipment Flexibility

Blocks processed in this furnace range from 8 in. to 24 in. thick. Designed for 20ton charge, furnace has processed charges weighing from 6 to 28 tons.

Material Saving

High yield is maintained on a continuing basis; scale formation is negligible.

Human Element

Automatic control of the heating cycle eliminates variations due to human handling and operation.

Floor Space

In the space previously occupied by one conventional furnace, this Selas fast heating furnace now accomplishes the work of 5 conventional furnaces! Eliminated need for new heat treat building.

For case histories covering steel mill heat processing operations, as well as heat treating, heating for hot working and brazing, send for reprint "An Economic Appraisal of Continuous Heat Processing" and "Fast Heating Is Practical . . . and Safe." Address Dept. 17, Selas Corporation of America, Dresher, Pa.

Gradiation and Duradiant are registered trade names of Selas Corporation of America.





PITTSBURGH STEEL'S cold-rolled sheet passes critical surface inspection as . . .

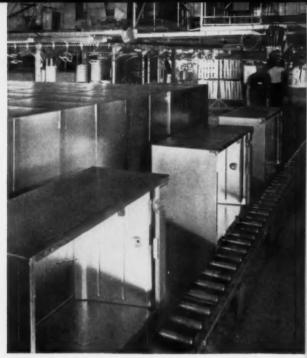
The 3 F's in Pittsburgh Steel's Sheets Keep Automated Lines Rolling at Westinghouse

STEEL that is free of flaws is vital to the gleaming painted surface of finished refrigerator.





COMPLETELY FORMED by automated equipment, refrigerator's shell then moves to welding operation.



3 F's-Flatness, Finish, Formability-show up here as outer shells await painting.

"If we made 75 a day then, we were really going. Now, we're geared up here to make more than twice that in an hour."

That quote came from a veteran production man at Westinghouse Electric's huge and humming Appliance Division plant near Columbus, Ohio.

The difference between daily production of 75 refrigerators (in 1927) and today's rate is explained by just one word—automation.

Production of the refrigerator's steel shell is automated completely through welding. This includes some 15 distinct operations required to convert smooth, precisely dimensioned cold rolled sheet steel into the outer shell of a home refrigerator.

Part of Westinghouse's ability to use advanced production methods is due to the steel available from suppliers like Pittsburgh Steel Company.

H. L. Johnson, the plant's purchasing agent, and Joseph A. Scattoloni, staff supervisor of manufacturing engineering, agree that automation places special responsibilities on their steel suppliers. As Mr. Scattoloni puts it:

"Westinghouse built its reputation on quality products, but we can't build quality when it isn't in the materials to start with."

Pittsburgh Steel knows—even without automation to consider—that sheet going into appliances must have the Three F's—Flatness, Finish and Formability. Add requirements of automation and you need

these same qualities, but more so. Here's why they're so vital.

Dimensional accuracy—A variation of as little as .005 inch could compound into a total error large enough to interrupt production, scrap a shell or both.

To produce a shell, automatic equipment has to make six 90-degree bends, as well as a smaller seventh one. If the sheet isn't flat or if it lacks uniform temper, bends can be thrown off

Once bends are made, the sheets can't be allowed to spring back. Over-bending, too, will scrap a shell. That gets costly when you consider that the shell—at about 94 pounds—is the largest single item in the 140-150 pounds of steel per finished refrigerator.

If the sheet isn't flat, waviness will show up glaringly in the finished shell, or it could cause an "oil-canning" effect. This poses a threat to the painted surface.

If camber isn't within specific limits, sheets can't be held properly during blanking and punching. Holes creep beyond tolerances, ultimately scrapping the shell.

 Surface finish—Since the shell must take a uniform and critical painting, surface finish is all-important.

Rust, scale, piping, pits—singly, or in combination—can ruin a shell, so Pittsburgh Steel knows why flaw-free steel is a must.

 Formability—Another name for shapeliness—is more vital in automatic forming than in a hand operation. And strain marks resulting from improperly bent sheet will require either complete scrapping or correction by expensive hand machine methods.

· Westinghouse stakes its reputation on quality of its products. A supplier who can provide Westinghouse with this quality can meet your needs, too. The full range of hot-and-cold rolled sheet and strip, produced exactingly on the steel industry's finest mill equipment—is as close as your telephone. Call any of the Pittsburgh Steel Company district sales offices listed here. Do it today!

Pittsburgh Steel Company

Grant Building

Pittsburgh 30, Pa.



District Sales Offices

Atlanta Chicago Cleveland Dallas Dayton Detroit Houston Los Angeles New York Philadelphia Pittsburgh Tulsa Warren, Ohio

dispersions digest

COLLOIDAL GRAPHITE, MOLY-SULFIDE, VERMICULITE, AND OTHER SOLIDS

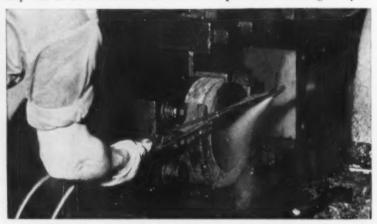
Reporting uses for

Dies last three times longer with 'Aquadag', according to another prominent midwest extruder. Metal pickup on the extruding dies has been completely eliminated by the use of this Acheson dispersion, extending the effective use of the dies from 1000 to 3000 strokes. The evaporation of its water-base leaves a dry, adherent "graphoid" film on all lubricated surfaces, inhibiting the build-up of abrasive precipitates. At the same time, the unbroken, microscopically-thin film that 'Aquadag' provides, facilitates metal flow and reduces scoring to a negligible minimum. Application of the lubricant is by spraying a dilution of 1 part 'Aquadag' to 20 parts water, on the die surface before each "push" of the extrusion press

A 'dag' graphite coating is also applied to the follow blocks on this company's 1400 ton horizontal extrusion presses. For purposes of even greater economy, 'Prodag' — semi-colloidal graphite in water — is used in this application. This effective parting agent prevents the

WHY 'DAG' DISPERSIONS MEAN PERFORMANCE IN ALUMINUM EXTRUDING

The excellent lubricating properties of Acheson Colloidal Graphite, under conditions of extreme heat and pressure have been confirmed by leading extruders of aluminum, steel, copper, brass, lead and other metals. Water-base dispersions of colloidal graphite used in the following application histories have provided savings in material handling, reduced maintenance time and expense, prevented seizure, extended die life, and produced extrusions of more uniformly high quality. Any one of these benefits should make profitable reading for you.



For faster, more uniform application with less material consumption, Aluminum Extrusions, Inc. finds 'Aquadag' their best die lubricant.

A little 'Aquadag' goes a long way for Aluminum Extrusions, Inc., Charlotte, Michigan. This company, one of the leading independent extruders in the country, has found that by applying 'Aquadag' on die surfaces they have effected a 30% savings in their material handling. Formerly, they had used an oil-graphite mixture which required a dilution ratio of 16 lbs. of graphite to a 55 gallon drum of oil. It was too slowly applied by swab and too coarse to apply by

Extended die life and extrusions with more perfect surface finish, are attributed to the use of 'Aquadag'.

flash, back-extruded from the billet skin, from locking the butt to the follow block. An Acheson dispersion is very possibly the answer to your lubricating troubles. For additional information, write for your free copy of Bulletin 426. Address Dept. IA-78. spray with any degree of efficiency. With 'Aquadag', Aluminum Extrusions has a lubricant that is finer in particle size, permits wider coverage, and provides greater "sprayability". These minute particles pass freely through the spray nozzle, eliminating the costly downtime formerly involved in cleaning clogged equipment. The tough, dry film 'Aquadag' forms upon the evaporation of its water carrier, doesn't smoke or react when applied to hot dies and metals. This improves working conditions as well as extends die life. Important also to both die surfaces as well as the finished extrusion, is the fact that this durable, low-friction film allows easier, more uniform metal flow.

Considered in relation to the over 12 million pounds of aluminum extruded yearly at this plant . . . 85% of it in fabricated form . . . 'Aquadag' has brought important production efficiencies and material economy to Aluminum Extrusions, Inc. In many, similar instances where product quality and basic economy are demanded, Acheson colloidal dispersions have gained ready acceptance.

Exclusive Acheson processing techniques guarantee a consistently uniform top-quality product. If your problem is more effective lubrication under normally adverse conditions of extreme temperature, pressures, or abrasion, call in your Acheson Service Engineer.



ACHESON Colloids Company

PORT HURON, MICHIGAN

A division of Acheson Industries, Inc.

Also Acheson Industries (Europe) Ltd. and affiliates, London, England

Offices in: Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles • Milwaukee Mew York • Philadelphia • Pittsburgh • Rochester • St. Louis • Toronto

You'll Discover Extra Profits Through Cost Planning

By C. E. Gray-Supervisor, Cost Control, Allis-Chalmers Boston Works

Do you know what profit increase to expect from a given amount of cost-cutting effort or redesign?

Or what costs will be on a new product while it's still in the drawing stage?

For that matter, what your current products really cost?

A system of advance cost planning is the way to find out.

Knowing what costs have been is not enough today. It's necessary to know what costs are and should be for current output, or will be on proposed designs. A program of advance cost planning forms the basis of true profit potential; and in the end this is the item of most vital concern.

Allis-Chalmers Boston Works makes circuit breakers—in many sizes and from a variety of components. Profitwise, some of these items were behaving poorly. As a result, action was begun several years ago to find how a given amount of cost-cutting effort by engineering and manufacturing could be made to yield the greatest payoff.

Actual returned costs on orders for previous years showed which lines were in trouble. The next step was to analyze the relationship between cost and selling price. Existing planning records were used to get standard costs for the breaker lines in question. These records are direct labor incentive rates, material cost files and manu-

facturing quantity planning data.

Simplify Costing—Planned costs are defined as what an item should cost based on a projection of direct labor incentive rates, applicable burden costs and material costs at current prices. These factors are

calculated for each part and assembly, in the quantities proposed by production planning.

In place of special forms, costs are entered on tracings of factory parts lists. This simplifies paper work. The tabulations can be blue-



THOROUGH CHECK: Production engineer makes a careful analysis of a circuit breaker component to determine manufacturing steps and costs.

printed in any quantity required. Also, they can be put together in book form to present the cost breakdown of each product.

The cost for each part is shown. Total planned cost indicates what the unit should cost to make. It's a target cost, which should be realized with ordinary control.

Finds the Trouble — When the planned cost is put into the profit analysis, it shows which is too costly—the manufacturing process or the basic design. Usually, poor profit performance turns out to be a combination of both.

The basic reasoning behind it all is this: If selling price vs. actual cost shows poor profit experience, then planned cost vs. actual cost may show a need to monitor manufacturing more closely. Planned cost vs. selling price will indicate the limits of profit you can expect from the design.

Improvement Target—Guided by these findings, management can act. Improvement needed in manufacturing may be pinpointed by production order analysis. Comparison of actual costs with planned costs for parts and operations is one way of bringing trouble spots to light.

Experience shows, however, that most labor variance is more closely related to the type of work being done than the type of product. Because of this, labor variance investigation is best handled through periodic checks or samplings of direct labor records. Variance is the amount by which actual results exceed planned cost.

Material variance can be another sign of shortcomings in manufacture. Rejected work and material ordinarily aren't charged to production orders and are subject to budgetary control. This can be analyzed and reported separately. Experience at Boston Works is that most material variance appearing as part of an order cost results from pricing and quantity disparities; this doesn't result in out-of-pocket losses.

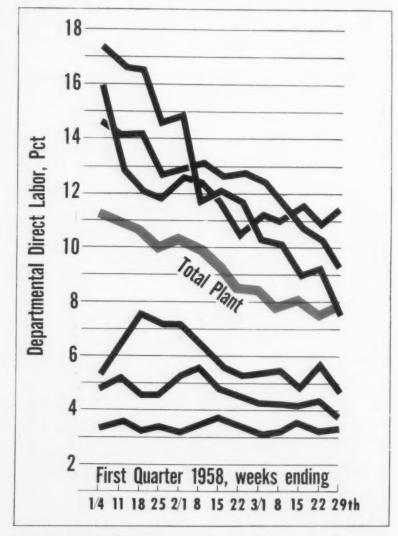
Profit Potential—Comparison of planned cost and selling prices showed that some breaker designs had little or no profit potential. The margin between selling price and standard cost was too slim, or non-existent. This started an analysis of redesign to find what changes might improve the payoff.

Poor profit potential of a design that functions well may or may not dictate prompt redesign. Economics of the situation must govern.

Assume two lines of equipment made by the same manufacturer. Line A has a planned production of 100 units in the next year and a profit potential of 5 pct. Line B has a planned production of five units at a 10 pct loss. Both units sell for \$10,000. Evaluation in light of an acceptable target profit shows that a successful cost-cutting program could yield \$100,000 for Line A and \$12,500 Line B.

Other factors being equal, Line A is the one on which the effort should be concentrated. Line B can be brought along later.

Chart Analysis—The outcome of this method of analysis is illustrated by setting up a bar graph covering



STEADY IMPROVEMENT: Weekly labor variance, expressed as a percentage of departmental direct labor, is plotted on a chart to keep all supervisors advised of each department's status and overall trend.

about 40 breaker types. The sequence of types on this chart begins with the item which will produce the greatest return on an investment in development and tooling via redesign. It ends with the units which are already returning a good profit.

All redesign for cost reduction can't be programmed concurrently, so the chart is revised yearly to show redesigns completed and reflect changing market conditions.

Planned costs on current production also furnish a ready reference for other activities. New production methods, for instance, are guided by planned costs.

The decision to purchase outside or make in the plant is often based on a comparison of planned cost and outside quotation. However, a different application of burden to the make-here cost may be needed.

Looking Ahead—Getting planned costs for redesigned or proposed products is quite similar to the method for existing designs. First, engineering supplies drawings or sketches of the new design. Next, piecework estimates are made for each machine or assembly operations, along with tooling. Then prints of any item purchased outside are sent out for quotation. And finally, planned cost of the unit is determined by pooling results of these activities with raw material costs.

When the design looks sound from the factory cost angle, it's given closer scrutiny by manufacturing. Methods, shop and inspection personnel review the drawings with the design engineer. They discuss possible design changes to avoid process problems.

This taps the know-how of manufacturing specialists before the design hits the shop as a more or less inflexible proposition.

Operating Standards — Planned costs are also used as standards for manufacturing efficiency. A weekly review of all direct labor is made. It analyzes variances and assigns



REVIEW BOARD: New design is reviewed by author Gray (left); A. E. Schuler, Supt. Machine Shop & Tool Design; J. M. Robinson, General Foreman, Methods & Time Study; S. R. Stubbs, Production Engineer; R. S. MacDonald, Product Engineer; and T. J. Korey, Chief Inspector.

causes for costs over standard. Foremen in the shop help by recording the cause of variances.

This pinpoints the situation at once. Sometimes it paves the way for prompt correction in the shop while the job is still in process.

Labor variance is divided into three main categories: Daywork—absence of a piecework rate on an operation where a rate should be available. Breakups—extra setup charges paid because the quantity specified wasn't completed on the original setup. Piecework losses—conditions which made the incentive rate allowance inadequate.

The weekly review of labor variance is made as promptly as possible after the payroll section releases labor tickets. Completed labor tickets clearly show whether or not the work was completed as planned.

Planned times are considered estimates made before piecework rates on new items are set. They are used as a costing basis until the time-studied rate is applied to the operation. Differences in the other direction generally result from increased effort on the part of the operator, through incentive earnings. It's not taken note of by the analysis activity.

Find and Correct It — Labor variances are catalogued by cause, evaluated in terms of factory cost, and organized into a report. This is distributed to supervisors and foremen concerned.

Not all variances are avoidable at the level of the shop foreman. In some instances the cause is clear. In others, further investigation is needed to fix responsibility. While almost any variance cause can be corrected, the end should justify the means. At the start of a program of this sort, the more costly losses should receive attention first.

The weekly labor variance report is supplemented with a chart. This depicts the current week's variance for each department, as well as the plant total added to the plots of previous weeks. Periodic meetings with management help to clarify matters and insure a continuing control effort.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

New Commutator Alloy Takes the Heat

By Webster Hodge-Consultant, Battelle Memorial Institute, Columbus, O.

Designed especially for use in small electric motors and alternators, this special zirconiumcopper alloy can retain its strength at high temperatures.

• In recent aircraft and missile development, metals for engines and outer skins have received the lion's share of attention. Equally vital are those special materials that go into auxiliary and control equipment. They, too, are expected to operate under conditions of ever-increasing severity.

Among the essential components of missiles and aircraft are small electric motors and ac-generators. Current military demands require alternators with commutator materials that operate continuously at temperatures above the softening temperature of silver-bearing copper. Until recently, this was the best material available.

Brighter Picture-"N-4"-a new

zirconium-copper alloy for commutators — brightens the picture considerably. Developed at Battelle Memorial Institute for the Nippert Electric Products Co., it can be successfully used in motors subjected to highly unfavorable operating conditions.

Few materials combine high electrical conductivity with enough mechanical strength at elevated temperatures to withstand the forces of vibration and high-speed rotation. Yet this is a prime requirement for the commutators of small motors and alternators in more critical applications.

Avoid Burn-out—Unlike a motor winding, a commutator cannot be banded. This means that if a commutator segment moves as little as 0.0001 in., it may result in a burned-out motor.

Specific advantages of the new zirconium-copper alloy can be readily appreciated by comparing them with the properties of other available materials. Annealed pure copper and silver, for example, have excellent conductivity. But silver has very little strength and even cold-worked copper with a tensile strength of 55,000 psi will anneal in one hour at 250°F.

How They Rate — Only three elements can be alloyed with copper without greatly reducing its electrical conductivity. These are silver, zirconium, and chromium. Each of these elements adds mechanical strength which, in coldworked metal, is retained at higher temperatures.

Silver additions up to about 0.1 pct progressively raise the softening temperature of copper. Beyond 0.1 pct, silver has little effect on the recrystallization temperature.

Extremely small additions of zirconium—as little as 0.05 pct—increase the softening temperature of copper a great deal. Further increases, up to the limit of solid solubility of zirconium in copper (0.15 pct), improves the temperature stability and strength only a little more.

Chromium additions produce an age-hardening alloy that is commercially available in two grades.

Annealing Helps — Room-temperature tensile properties of some available commutator alloys are shown in Table 1. At room temperature, chromium copper has by far the best mechanical properties. But when notched-bar rupture strength of these materials at 550°F is considered (Table 2), only the N-4 alloy can maintain strength for extended periods.

Further, the zirconium-copper alloy does not suffer rapid grain

Table 1. Tensile Properties of Commutator Alloys (a)

	Specimens Parallel to Holling Direction		
Property	Silver Bearing(b)	Chromium Copper(°)	N-4 Alloy Zr-Cu
Hardness, R _B	61	82	64
Tensile Strength, psi	50,000	71,000	53,000
Yield Strength (0.2 pct Offset), psi	47,000	64,000	50,500
Reduction in Area, pct	51	43	54
Elongation, pct in 2 in.	8	16	10

(*) At room temperature.

(b) Silver-bearing copper was in cold-rolled condition, the other alloys were solution annealed, quenched, cold rolled, and aged.

(°) Nominal 0.8 pct chromium alloy.

growth during annealing except at temperatures above 1500°F (Table 3). Effect of various solution annealing and aging treatments on the hardness and electrical conductivity of N-4 alloy is shown in Table 4. A solution annealing temperature of 1400°F or higher is required to obtain good thermal stability.

Since the N-4 alloy withstands high temperatures, connections from windings to N-4 commutator bars can be silver soldered readily. Although silver-bearing copper will soften during soldering, N-4 will retain most of its hardness.

Thermally Stable—Commutators for high-speed motors are precision-built and contain a steel core, a copper alloy for carrying the current, and an insulating material. The core has the greatest thermal stability at high temperatures. Use of zirconium copper has increased the thermal stability of the current-carrying element to higher temperatures than practical insulating materials presently can withstand.

Now the upper temperature limit for operation of high-speed motors is restricted by the insulating material.

Good Insulators—Bonded mica is the best insulating material available for commutators. This material can be ground to close tolerances. It can be formed and cured at temperatures that do not damage the metal parts of the commutator. The top operating temperature for a commutator built with bonded mica is restricted by the limitations of the bonding agent.

Even 550°F — Nippert now furnishes commutators built with the N-4 alloy and alkid vinyl-bonded mica. This combination will withstand severe vibrations while operating continuously at temperatures up to 450°F.

Commutators made with N-4 and the best silicone-bonded mica can operate continuously at 550°F. This is the highest operating temperature that can be recommended at present.

Table 2. Rupture Strength of Commutator
Alloys at 550°F

Alloy	Rolling Direction	After 100 Hours, psi		After 500 Hours, psi(*)	
		Unnotched	Notched	Unnotched	Notched
N-4 Alloy	Longitudinal	34,000	37,500	32,000	35,500
Chromium Copper	Longitudinal	36,000	28,000	32,500	23,500
Silver-Bearing Copper	Longitudinal	17,500	15,500	10,500	(b)
N-4 Alloy Zr-Cu	Transverse	38,000	41,500	36,500	38,500
Chromium Copper	Transverse	18,500	17,000	13,000	12,000
Silver-Bearing Copper	Transverse	20,000	15,500	14,000	(*)

Condition of specimens: N-4 alloy, Zr-Cu — solution annealed, quenched, cold rolled, aged. R_B 64. Chromium copper — solution annealed, quenched, cold rolled, aged, R_B62. Silver-bearing copper — cold rolled, R_B 61.

(*) Extrapolated from tests running up to 350 hours. 10,000 psi after 210 hours and decreasing rapidly. 10,000 psi after 300 hours and decreasing rapidly. (b) Approximately

(°) Approximately

Table 3. Grain Size of N-4 Alloy After Solution
Annealing at Various Temperatures

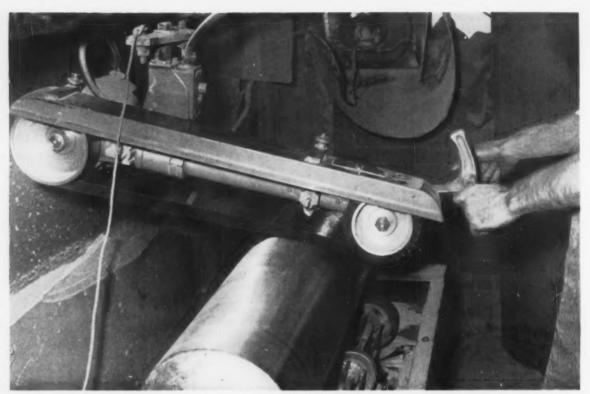
	Grain Size, mm	
	Longitudinal	Transverse
Solution Annealing Temperature 1200°F(°)	0.023	0.025
Solution Annealing Temperature 1300	0.020	0.025
Solution Annealing Temperature 1400	0.035	0.025
Solution Annealing Temperature 1500	0.035	0.035
Solution Annealing Temperature 1600	0.090	0.090

(a) Held 1/2 hour at temperature and water quenched.

Table 4. Hardness and Electrical Conductivity of N-4 Alloy*

	Hardness, R _B		Electrical Conductivity, pct IACS	
Solution Annealing Temperature, °F	Not Aged	Aged 2 Hours at 800°F	Not Aged	Aged 2 Hours at 800°F
1100	69	60	93	95
1200	69	62	93	94.5
1300	69	65	92.5	94
1400	69	68	89	96
1500	69	69	84	92.5

* Cold rolled 60 pct after solution annealing.



USE IT TWO WAYS: Swing grinding is done either against the contact wheel or on the free-belt length.

Abrasive Belts Grind Finishing Costs to New Lows

Can coated abrasive belts cut your grinding and finishing costs, boost production, improve product appearance?

It doesn't cost much to find out. Belts and machines are relatively inexpensive, and expert advice is free.

■ Don't overlook coated abrasive belts if you're seeking ways to cut grinding and finishing costs. Whether the job calls for heavy stock removal or fine polishing, many firms find them to be faster and less costly than other methods. Although abrasive belts are used on various types of machines, the well known backstand type of grinder is probably the most versatile. It's a simple machine with inexpensive parts, and it enables almost anyone to experiment with or convert to belt grinding for a modest sum.

A backstand unit consists of: (1) a driven contact wheel which is mounted on the spindle of a grinding and polishing lathe in place of a hard abrasive wheel; (2) an idler pulley which is set behind the lathe in line with the contact wheel; (3) an abrasive belt which travels over the driven contact wheel and idler pul-

ley at varying speed rates. Workpieces are usually pressed against the belt at a spot just below the horizontal centerline of the contact wheel.

Get Triple Benefits—For heavy stock removal, such as the grinding of excess weld metal, many firms find that abrasive belts not only cut costs, but speed production and improve the appearance of the finished part.

For example, one company formerly chipped excess weld metal from large diameter pipes, using two men who took 35 minutes to do the job. One man now does it in 15 minutes

with an abrasive belt on a swing grinder.

Another firm now takes just six minutes to grind eight lineal feet of weld metal, a job which once took 1½ hours. And an electric motor manufacturer boosted output 800 pct in grinding weld metal from stator shells, simply by switching to an abrasive belt machine that does all the work in one pass.

Can Halve Costs — Forged steel tools also benefit from the belt treatment. One company switched to belts for grinding and finishing its custom line of tools and boosted overall output in this department by 35 pct. Costs were cut nearly 25 pct per average unit and were actually halved in some cases.

Another hardware manufacturer swung over to belt grinding to remove heat treating scale from the sockets of high carbon steel shovels. The firm formerly used a coarse grit setup wheel followed by a grit 100 coated abrasive belt. Now the work is done in one operation with a grit 80 aluminum oxide, resin bond belt. It runs over a 30 durometer rubber contact wheel whose scoop serrations give it the necessary "bite" for stock removal.

Shovel sockets now have a better looking finish than before and production is up about 60 pct. The firm also finds many other uses for its backstand equipment, particularly for fine grinding and polishing.

Produces Fine Finishes — The ability of abrasive belts to do fine finishing work is shown in the case of a business machine manufacturer who converted more than 300 finishing operations to belt techniques. The result: overall polishing costs cut by 30 pct; production rates boosted sharply; final finishes well within rigid specifications.

The firm's major finishing work is done on cash register cabinets which are weld - fabricated from steel stampings. (Weld bead removal is not a problem since most weldments are inside the cabinets.)

For initial finishing on cabinets, the company uses a grit 220 silicon carbide, resin bond belt which runs dry over a 50 durometer rubber contact wheel. This removes high spots and conditions the metal for a grit 240 silicon carbide belt with a resinand-glue bond which runs greased over the same contact wheel. This produces a polished surface which is then buffed and plated.

This twin-belt operation takes just half the time of the former finishing technique which, incidentally, included 12 separate steps with various abrasives.

Eliminates Setup Wheels — For deburring and polishing a stainless steel stamping used on its cash registers, the firm switched a series of five setup wheels to another two-

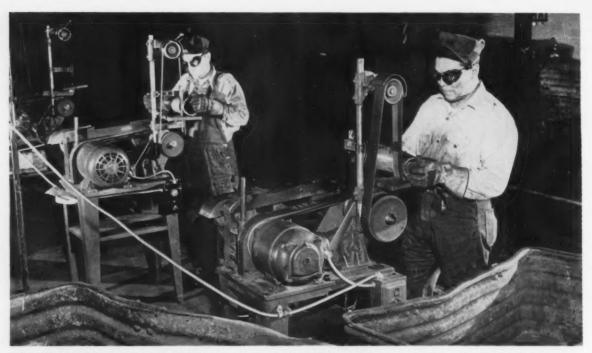
belt operation. Deburring is done with a grit 180 aluminum oxide, resin bond belt running dry over a 70 durometer rubber contact wheel; polishing requires a grit 240 silicon carbide, resin bond belt on a 50 durometer rubber wheel. In addition to the three operations that were eliminated, unit finishing cost was cut 20 pct.

How can coated abrasive belts do so many grinding and finishing jobs better, faster, and for less money? Here are some reasons given by a leading belt maker, Minnesota Mining & Mfg. Co., St. Paul:

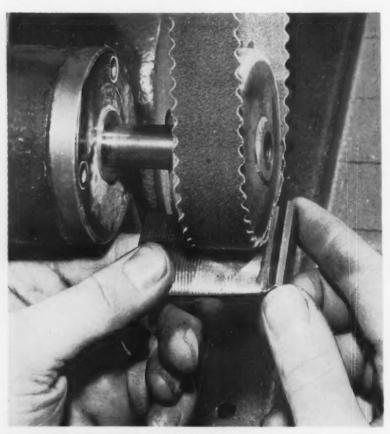
1. Because belts travel at speeds up to 10,000 sfpm and grind without chatter or bumps, coarser grits



SIMPLE BUT EFFECTIVE: Tough, resin-bonded abrasive belts and inexpensive backstands can remove a lot of metal in a hurry.



HANDY AIDS: Deburring units make convenient attachments for bench-type grinding and polishing lathes.



PROBLEM SOLVED: Scalloped-edge belts were developed to grind jet-blade surfaces which were hard to reach and tore straight belt edges.

will produce the same smooth finish formerly obtained with a series of finer grits. This is a major timesaving factor.

- 2. Long belts (up to 14 ft) dissipate heat faster. This results in cooler cutting and means that there is less tendency for workpieces to distort.
- 3. Belts need no time out for dressing down. A worn belt is simply discarded and a new one is slipped into place in a few seconds. Just as quickly, belt types can be switched to produce different finishes on different workpieces.

Choosing the specific type of belt, contact wheel and machine for any particular job may require the help of an expert with years of experience in the field. The larger makers of coated abrasive belts all provide this service.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

How Planning Cuts Welding Time

With 1400 ft of heavy fillet welding per unit, a mine car builder puts heavy stress on close fit.

It makes the job of welding much easier, saves time and results in better weld quality.

 Mine cars often remain many years below the surface shuttling coal from seam to conveyor. It takes rugged construction to withstand such service.

With this in mind, The Watt Car and Wheel Co., Barnesville, O., recently produced 200 all-welded mine cars for the Hanna Coal Co., Div. of Pittsburgh Consolidation Coal Co. The eight-wheel cars weigh 6 tons each, are 48 in. high, 84 in. wide and 26 ft long inside. Each car holds 543 cu ft or about 15 tons of coal.

Constructed of high tensile steel, the sides are 5/16 in. thick; the bottom, as well as gussets, braces and other supporting parts, are 3/8 in. thick. The cars are equipped with automatic couplers and roller bearing wheels.

Key in Planning — Assembly, welding and painting were done in the welding shop. The combination of two tacking and four welding stations provided a steady flow free of bottlenecks or wasted time.

The tacking stations picked up the job from the cutting room. All parts were added here so that men at the welding stations did only welding and no fitting.

At each tacking station, a threeman team, one welder, one fitter and a helper, assembled the car bodies. The welder made small, but strong, tacks which were easy to cover. The fitter worked closely with the welder to get the joints tight.

Stress Close Fit — When a part didn't fit right, the fitter trimmed it to size with a torch. Clamps and wedges were employed to pull the parts together.

The car was so designed that there was only one joint concealed by another part. This joint was welded at the fitting station before the outer part was added.

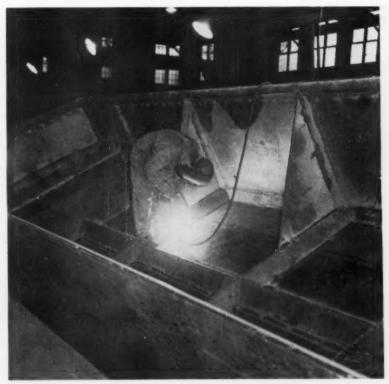
Welding at the tacking stations was with 5/32 in. and 3/16 in. E-6012 electrodes using direct current. Some welds were vertical and required an electrode with fast freezing characteristics. The E-6012 electrodes were well suited for this work.

Power Units Adapt—Direct current for welding was supplied by standard Lincoln Electric, 500-amp Idealarc, combination ac/dc welding machines. Watt Car uses direct current for 3/16 in. and smaller conventional electrodes, and alternating current for iron

powder electrodes and larger conventional electrodes.

After the mine car body was tacked, it was moved over to one of the welding stations. There 1400 ft of welding on each car was completed, mostly fillet welds from 1/4 to 3/4 in. Welders did this job in two days per car, thanks to the fact that they were free from having to fill gaps in poorly fit-up joints.

An overhead crane was used to position the cars for downhand welding. Each car was turned eight times. Most welds were poured in with 7/32-in. E-6024 iron powder electrodes, although some 5/32-in. and 3/16-in. sizes were used on the smaller welds. On joints which had to be welded uphill, an E-6013 iron powder electrode (proposed E-6014) with fast freezing ability was used.



ALL FITTING DONE: Welder has only to complete fillet welds in downhand position. To do this, car is repositioned eight times.

Torches Machine Big Forgings To Near-Finished Size

By G. J. Gilhorn-Production Tooling Supt., Midvale-Heppenstall Co., Philadelphia

With a litle ingenuity, old ideas can often be adapted to many jobs beyond their intended scope.

A good example of this is the use of flame cutting for rough machining.

It frees costly machines for finish work only, cuts in less time and ups overall output.

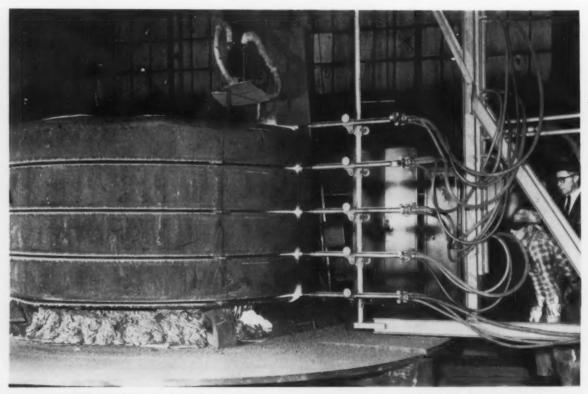
 Flame cutting is a far more flexible tool than many people suppose.
 Besides being a cheap way to cut blanks and billets or remove gates and risers from castings, it can also replace rough machining to bring large forgings down to near-specification size.

It used to take several days on high-priced machines just to rough off inches of extra metal before finish machining could start. So that these custom-built machines could be kept entirely on the closer work, Midvale-Heppenstall 1 o o k e d for some other way to chop excess metal from the forgings.

The answer was found by combining the principle of flame cutting with some specialized equipment already on hand. The result is a unit that removes excess metal from the forgings without a single cutting tool touching them.

Machining time is drastically reduced. As an example, one job on forged rings which formerly took 320 hours is machined in less than 115 hours by the new method.

Simple Yet Versatile — Equipment consists mainly of a large turntable, flame-cutting torches, and controls to govern turntable speed, motion and flame intensity. The setup is used to flame-cut multiple ring forgings into the desired number of rings, flame-cut chamfers on outside and inside diameters, and reduce wall thickness.



BIG BUT PRECISE: Controlled-speed turntable moves the work past bank of stationary Linde C-43 torches.

The unit handles work from 36 in. OD to more than 200 inches. Weight-carrying capacity is 120,000 pounds and turntable speed is infinitely variable from 0 to 20 revolutions per hour. Cutting intensity of the flame and speed of the machine can be adjusted to the cutting specifications of each piece.

The multiple ring forging shown in the photos was flame cut into four rings of equal thickness, leaving one inch for machining to finished size.

Top and bottom torches slice off excess material while the center torches cut the forging into four rings. Holes (about ¾ in. diam) are drilled for starting the center torches; top and bottom torches are moved into position with gear racks on the fixture. The torch carrier moves on tracks, which are located radially to the center of the table.

Much Faster—The slicing operation shown in the photos takes about 2½ hours, including set up. This compares with about 30 hours for the same job on a large vertical mill.

After slicing, the rings are stressrelieved and returned to the turntable for further flame-cutting.

Torches mounted on a horizontal arm are used for bevels and vertical cuts. Both a vertical cut on the outside diameter and a deep (40° from vertical) chamfer-cut on the inside are made at the same time.

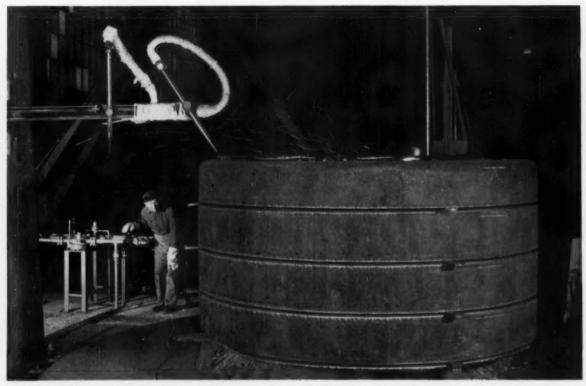
Then the rings are again stressrelieved and sent to the large vertical mills for finish machining. Less than one inch is left on all faces for machining. When finish-turned, bored, faced and grooved, the rings are cut into two equal half-rings to become part of the lubricating equipment on large rotors.

Cuts Any Steel—The flame-cutting equipment developed by Midvale-Heppenstall will cut any type of steel from low carbon to high alloy. Alloy steels must be pre-heated and temperatures have to be held within specified limits to maintain the structure of the steel during flame-cutting.

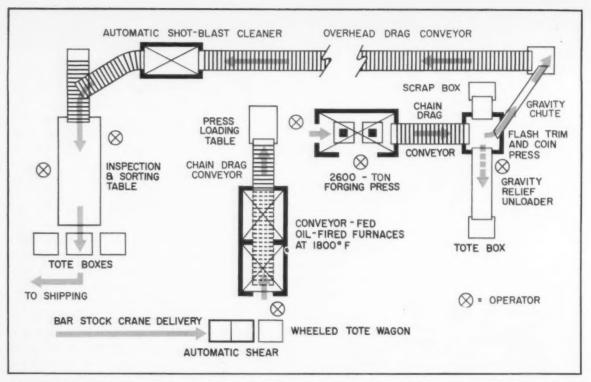
An example of this was a recent die-block forging which was flame-cut to shape. It was heated to 1150°F and placed on the turntable for cutting a conical shape on top. Lower limit for preheat temperature was 700°F. The forging had to be finish flame-cut above this temperature. Removal of excess metal from the die block by flame cutting reduced machining time about 40 pct.

Flame cutting isn't limited to circular forgings or circular cuts. Another unit at M-H permits tangential cuts and straight line cuts in any direction without moving the forging. This also results in sizeable savings; the fact that the flame cutting fixtures are easily moved to any position eliminates the services of a crane and crane crew, as well as the time it would take to shift a heavy forging.

Wall thicknesses up to 40 in. have been successfully cut.



FOR OTHER CUTS: Vertical and angled torches remove metal from inner and outer walls, also cut chamfers.



CONVEYOR LAYOUT: From receiving through forging steps and back to shipping, conveyor units speed process.

Low-Cost Conveyor Units Speed Forging Lines

How far can a job shop mechanize? Much further than you might think.

One forging firm does it by going to presses and developing its own system of conveyors.

By R. H. Eshelman—Engineering Editor.

Independent forging shops are searching to meet competition by improving their products. At the same time they've got some tough barriers to beat in rising costs. Without offering any quick panacea, the experience of one firm suggests ways of meeting these challenges.

One forging executive, Albert Lefere, President of Lefere Forge and Machine Co., Jackson, Mich., warns: "You've got to watch details if you want to stay competitive on costs in this business." The plant of his firm reflects this attitude.

Specializes in Rounds—As a specialist in round blanks for gears and hubs, the firm has proved through the years that it can out-produce and underprice competition.

It's no trade secret that it's attention to details that does it. But just what does Lefere mean by attention to details?

For one thing it means putting together the right equipment and setup for the job. Being a family organization with a background in forging has not fettered its thinking. Lefere has screened and selected ideas which it feels are best adapted to its situation.

Mechanized Handling — For instance, materials and parts handling are conveyorized far beyond anything found in most job shops. Royal Lefere, Vice - President responsible for manufacturing operations, explains, "We build our own handling system from ideas we picked up here and there. While it's simple, it's effective and suits our needs."

In making the system, he explains, standard components are pieced together like an erector set. Angle iron and chain are used to make up drag-type power conveyors. Where practical, sheet metal chutes are used for gravity conveyors.

By designing and building its own system, Lefere got it at a modest cost and it's trouble-free in its simplicity. It eliminates the need for inplant trucks. Further, it services all the forging areas of the plant to speed production.

Use Presses — Automation has been considered but rejected at present because of the variety of jobs processed. But why presses? Most press forgings are made in only two or three blows. Mechanical ejection allows the forging designer to reduce draft, cutting material costs and machining time.

Press forgings take less operator skill. Dies, subject to squeeze rather than impact, can be inserted with longer-lasting die steels. Die life is further increased by short contact time followed by immediate ejection of the forging. Presses use comparatively inexpensive foundations.

Flash, rejects and scrap from other causes is lower, quality more uniform. Besides, press forging is more compatible with mechanized handling, giving an even process flow through the plant. Lefere has two lines set up with National Machinery 2500-ton presses.

Sequence of Operations—In forging a typical hub, round bar stock, 2½-in. diam, goes through an automatic Buffalo shear for cutting to length. An overhead crane brings the stock to the shear from receiving area. The operator loads the cut blanks on a wheeled tote wagon.

This is moved a short distance to the conveyorized oil-fired furnaces. The blanks are loaded in one end and come out the other at about 2250°F. A chain-link angle-iron drag conveyor moves the parts to the press loading table.

Forging Steps — The furnace operator at the side of the press takes heated blanks and places them

in the first die for breakdown forming. Next the press operator moves the part into the second position or finish die.

After the second stroke the operator drops the forging on a conveyor through the right side of the press. This conveyor carries the part to the trim press.

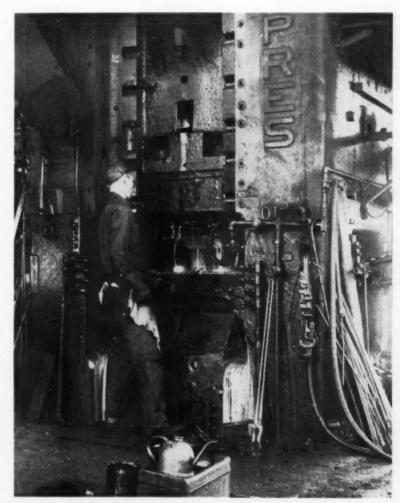
During forging a water-soluble oil both lubricates and cools the dies. This helps maintain temperature of dies at the proper level to effect longer die life.

Trim and Pierce—The trim press, manually loaded and unloaded, removes flash and pierces through the center hole in hub parts. The operator drops the completed forging in a gravity chute. This carries it to an elevator conveyor which connects with the overhead drag conveyor running the length of the building.

The overhead conveyor serves a dual purpose. It carries the forgings to the automatic shot-blast cleaner, and its speed is regulated so forgings are cooled sufficiently for handling.

A finished forging progresses from the entry at the trim press to the blast cleaner in about 2 hours and 45 minutes. After blast cleaning, forgings are carried by conveyor to stations for visual inspection and sorting.

To control quality the plant uses dimensional checks at the press at



DOUBLE ACTION: Press operator passes parts through two forging steps and then places them on drag conveyor through right side of press.

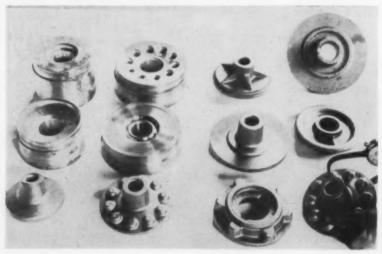
time of setup of each run. Since most of the setups feed finished forgings to the overhead conveyor, final step is to sort parts into shipping containers.

Few Rejects-Because dies are closely watched, rejects are very low placed.

and dies show longer life and less distortion. Often dies will give as many as 100,000 pieces. Periodic dimensional checks show when wear is reaching the critical stage. Then dies are either reworked or re-



GRAVITY WORKS: Parts from trim and pierce steps slide down gravity chute to conveyor elevator (right).



TYPICAL PARTS: Specialty is circular forgings such as hub and gear blanks. Design determines ease of production.

The firm has its own die shop where it both makes new dies and reworks those in use. By designing and building its own dies, the company is able to back up production operations with engineering and technical skill.

Minimize Downtime-In scheduling runs, changing of setups is done between shifts, or on the second shift. This cuts downtime. Since outside die dimensions are held pretty much standard, changeover is streamlined, too.

Working conditions are designed for maximum output. Cool air is brought in at work stations to displace fumes and heat.

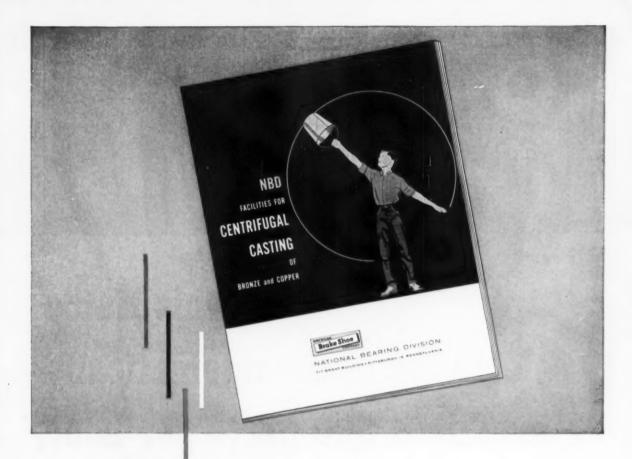
The regular switching of jobs reduces fatigue, monotony and similar human factors. For instance on the four station press line, the operators rotate from loading through trim press at 1/4 -hour intervals. It results in a high level of production throughout the shift. On some jobs it's as high as 5000 pieceparts per 8-hour shift at 100-pct efficiency.

Materials Vary-Although most forgings are the more common automotive stocks, some do vary. Typical hub forgings are made of SAE 1025 or 1045 stock. On the other hand, gear blanks are generally forged of higher alloy steels, such as 8620.

Size of parts produced on the press line varies too. With round uniform cross-sections, the setup will handle workpieces from 61/4 to 15 lb.

As Royal Lefere points out, whether a particular item can be set up for high-production press forging depends on configuration, metal movement and other design factors. Often a material savings can be found in closer draft angles. Greater uniformity of product permits design of rough forging closer to finished dimensions.

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This Natco selects the cycle automatically—machines 200 parts per hour, regardless of mix

One of the two stations where milling operations are performed (machine guard-rail removed).

Communication with the main control pulpit can be obtained from phone jacks along the entire

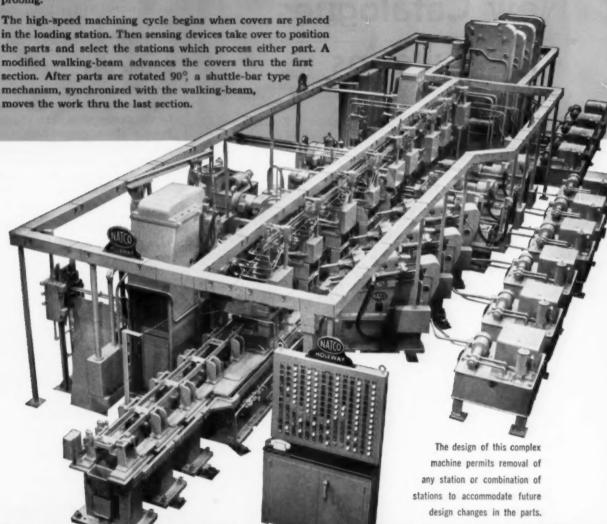
A vibratory feeder delivers Welch plugs which are inserted in the necks as the covers reach final processing stages.







This 32-station NATCO Transfer and Assembly Machine is part of the automated production-line on which engines are built at a major automotive plant. The NATCO performs selectively a number of unusual processing operations in the work cycle, including milling, deep-hole drilling, Welch-plug assembling, and probing.



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New Catalogues And Bulletins

Polarographic Unit

Concise information about equipment for polarographic measurements is available in a 4-page data sheet. (Leeds and Northrup Co.)

For free copy circle No. 1 on posteard, p. 122

Stripe Painter

A folder introduces a new friction-driven stripe painter unit. Over-all unit weight, fitted in its cleansing and shipping closed tank is approximately 40 lb. This machine paints 1, 2, 2¹/₄, 3 and 4-in. lines. (Dearborn Paint Striper Mfg. Co.)

For free copy circle No. 2 on postcard, p. 122

X-Ray Analysis

Titled "X-ray Analysis Theory & Instrumentation," a 12-page booklet covers basic principles. The brochure illustrates basic differences between: film diffraction, diffractometry and spectrography. Subjects discussed include: basic diffraction unit, Bragg's law, dif-

fractometer, wide range goniometer, electronic circuit panel, counting rate computer, spectrograph assembly, scintillation, proportional and flow proportional detectors, and geiger tubes. (Philips Electronics, Inc.)

For free copy circle No. 3 on postcard, p. 122

Ductile Iron

"A Case for Ductile Iron Economy" presents a convincing brief for this ferrous alloy. The 12-page bulletin shows progressively how patterns and molds are made, how the foundry charges and pours the metal, how castings are machined and finished and some of the end products. (T. B. Wood's Sons Co.)

For free copy circle No. 4 on postcard, p. 122

Deburring Units

Automated deburring machines are discussed in a 12-page catalog. It analyzes applications of various type deburring tools. Tools include: wire brushes, abrasive belts, abrasive disks, special brushes, polishing wheels, grinding wheels, files and milling cutters. (Acme Mfg. Co.)

For free copy circle No. 5 on postcard, p. 122

New Firm Name

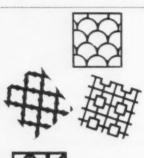
A new brochure describes activities of a company formerly named National Cylinder Gas Co. The 32-page publication explains why the firm decided to change its name and realign its organizational structure. (Chemetron Corp.)

For free copy circle No. 6 on postcard, p. 122

Plastisols

Polyvinyl plastisols are covered in a 16-page brochure. It features new end-uses for coating and molding compounds, describes varied application methods. Includes tech-

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 122.







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Distillation Column Internals

nical data on stock formulations and descriptions of anticipated future uses. (Chemical Products Corp.)

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Rare Earths

Three reference lists cover recent developments in industrial uses of the rare earth and thorium metals and alloys. These include: (1) Rare earth metals in ferrous alloys; (2) Rare earth metals in nonferrous alloys; (3) Rare earth metals and thorium in the electronic industry. (For free copy write on company letterhead to New Process Metals, Inc. 45-65 Manufacturers Place, Newark 5, N. J.)

Waste Treatment

Cyanide and chrome wastes treatment systems are reviewed in a publication. Containing schematic flow diagrams, the 4-page brochure explains methods used to meter chemicals automatically. (Milton Roy Co.)

For free copy circle No. 8 on postcard, p. 122

Centers, Grinder Dogs

A 20-page catalog describes centers and grinder dogs. Issued in celebration of a tool company's 50th anniversary, the catalog includes many new products. (Ready Tool Co.)

For free copy circle No. 9 on postcard, p. 122

Tractor Shovel

An industrial tractor shovel is featured in a 4-page bulletin. For bulk materials handling, the shovels maneuver easily in tight areas. In 3.5 seconds, it can go from 0 to 8 mph. Top speed: 13 mph in just 5.5 seconds. Carrying capacity: 2500 lb. (Yale & Towne Mfg. Co.) For free copy circle No. 10 on postcard, p. 122

Melting Stock

Sponge iron powder melting stock is presented in a comprehensive 20-page manual. It explains what the melting stock is, and dis-



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FREE LITERATURE

cusses the analysis of sponge iron, its carbon and carbon potential and the importance of purity. Details are given on the role of sponge iron in the acid openhearth, basic openhearth, electric arc furnace and high frequency furnace. (Hoeganaes Sponge Iron Corp.)

For free copy circle No. 11 on postcard, p. 122

Expanded Metal

Three new small-mesh, expanded-metal patterns are described in a 4-page folder. In each of these patterns, there are openings of two or three different sizes and shapes recurring in the sheet. (Penn Metal Co.)

For free copy circle No. 12 on postcard, p. 122

Welding Aluminum

Techniques that make welding of aluminum simple and practical are demonstrated in a new 33-minute full-color sound movie. Now available is a 28-page technical brochure of the same title. It repeats and can supplement information given to viewers of the film. The brochure is free. (Reynolds Metals Co.)

For free copy circle No. 13 on postcard, p. 122

Gas Manifolds

Manifolds for gases are presented in a 20-page catalog. It contains data on cylinder capacity, cylinder arrangements, dimensions, and advantages of manifolding. A key feature is announcement of a new stationary duplex oxygen manifold. (Air Reduction Co., Inc.)

For free copy circle No. 14 on postcard, p. 122

Window Units

Window units for visual observation of oil supply and operation of internal machine parts are subjects of a 4-page leaflet. Included is information for both glass and plastic window models, in five sizes ranging from % to 3¼ in. (Bijur Lubricating Corp.)

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Allis-Chalmers Trucks with TRI-LIFT Masts



STORES MORE MATERIAL — Wherever there's room above for stacking, an Allis-Chalmers Tri-Lift truck gives you up to 50 percent extra storage space at your "fork tips." No penalty when you work around low overhead obstructions, either.

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ALLIS-CHALMERS



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American Welding has produced thousands of complicated welded assemblies, which have satisfactorily met the stringent specifications for aircraft, missiles, submarines and atomic reactors. These components are welded from a wide range of materials, including most stainless grades, titanium, aluminum, and heatresistant alloys. Amweld's fabricating, forming, and machining facilities, plus testing and research departments, are available on a subcontract or research and development basis. If you would like to obtain complete information on the capabilities of American Welding and how we can be of assistance to you - phone or write today. Our local representative will be happy to call and discuss your requirements.

The American Welding & Mfg. Co. 120 Dietz Road • Warren, Ohio

AMERICAN WELDING

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Squaring Shears

Squaring shears covered in a booklet come in air and foot powered models. The 12-page booklet tells how quality control of manufacturing results in production of these well-built machines. It discusses advantages and features of the shears. (Wysong & Miles

For free copy circle No. 16 on postcard

Welding Inconel

Recommendations for spot welding Inconel "X" in thicknesses of 0.032 to 0.188 in. are contained in a bulletin. Actually, it's a paper presented at the 39th AWS technical meeting at St. Louis in April. (Taylor-Winfield Corp.)

Por free copy circle No. 17 en postcard

Melting, Heating

Equipment for melting and heating metal is featured in an 8-page bulletin. This equipment, it states, combines advantages of induction heating with economies of precision control. (Inductotherm Corp.)

For free copy circle No. 18 on posteard

Temperature Controls

Nine types of temperature controls are outlined in a condensed catalog. (Fenwal Inc.)

For free copy circle No. 19 on posteard

Enclosed Motors

Totally - enclosed motors introduced in a new bulletin possess self-contained heat exchanger cooling. For operation in highly contaminated atmospheres, the motors come in constant or adjustable speeds, in frame sizes of EB-120 and up, in ratings from 10 through 200 hp. These motors are designed for machine tool, steel mill drive and other applications. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 20 on postcard

Crane Control

A 20-page reference work deals with dc crane controls. (Clark Controller Co.)

For free copy circle No. 21 on postcard

Rhodium Plating

A 24-page booklet tells where, when and how to use rhodium electroplate. Essentially a technical exposition of rhodium's metallurgical properties, available to industry through several electroplating formulations, the literature features graphs and charts showing rates of deposition under various operating conditions. (For free copy write on company letterhead to Sel-Rex Corp., Nutley 10, N. J.)

Retaining Rings

A manufacturer of internal and external retaining rings has just published a 16-page engineering catalog. (Industrial Retaining Ring

For free copy circle No. 23 on postcard

Thread Rolling

A 6-page folder announces new stationary and revolving thread rolling heads. The bulletin includes design and operating features. (Landis Machine Co.)

For free copy circle No. 23 on postcard

Galvanometers

Galvanometers are described in a 12-page bulletin. (Consolidated Electrodynamics Corp.)

For free copy circle No. 24 on postcard

Steelmaking

A steelmaker's exclusive method of producing steels of unusual denPostcard valid 8 weeks only. After that use 7/10/58 own letterhead fully describing item wanted.

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FREE LITERATURE

sity and fine grain structure is outlined in a 4-page brochure. Steels made by this process are suited for production of any machine part that's subject to stress during operation, it states. The brochure shows how the process yields sound alloy, stainless, carbon and specialty steels. (Green River Steel Corp.)

For free copy circle No. 25 on postcard

Cutting Tools

High speed cutting tools are catalogued in a company publication. Described are N-mills, counterbores and chucking reamers up to 34-in. diam. Keyseat cutters, combined drills and countersinks, center reamers and special tools are also included. (Fastcut Tool Co.)

For free copy circle No. 26 on postcard

Powder Metallurgy

The Metal Powder Industries Federation, formerly the Metal Powder Assn., has just published a technical periodical. It's devoted to gears made by powder metallurgy methods. (Metal Powder Industries Federation.)

For free copy circle No. 27 on postcard

Vacuum Equipment

Advanced European and American high vacuum impregnating, drying, degassing, and filling techniques are described in a 28-page brochure. (NRC Equipment Corp.)

For free copy circle No. 28 on postcard

Battery Chargers

Silicon chargers for 12-v industrial truck batteries plug into standard ac electrical outlets. A 6-page folder describes the single-phase, 60-cycle, 115-v chargers. (C & D Batteries, Inc.)

For free copy circle No. 29 on postcard

Bucket Elevators

Standard industrial bucket elevators are subjects of a 36-page booklet. It includes simple selection data to make choosing of proper equipment quick and easy. Elevators' chain, sprockets, take-ups, bearings, buckets and pulleys are "mated" or matched for their rated capacity. (Chain Belt Co.)

For free copy circle No. 30 on postcard

Air Pilot Valves

Literature introduces new threeway pneumatic pilot valves. These valves are available with three mounting styles and three types of operators. They are compact, rugged and fast in actuation. (Logansport Machine Co., Inc.)

For free copy circle No. 31 en postcard

Machine Chassis

An 8-page booklet describes a straight-line indexing machine chassis. The chassis can be used as the basis for a completely automatic special machine or as a transfer machine with a minimum of automatically tooled stations and with multiple operators. (Swanson-Erie Corp.)

For free copy circle No. 32 on pesteard

Gages

Introducing a new line of highreliability gages, a valve maker offers a 48-page catalog. It covers gages with ranges from 15 psi, or 30-in. of vacuum, to 20,000 psi. (Kunkle Valve Co.)

For free copy circle No. 33 on pestcard

Silicon Steel

In 16 pages of charts and data, a publication analyzes a major producer's grain oriented, cold rolled, 3-pc silicon steel. Details as to typical curves, grading, annealing cycle, etc. are contained. (Allegheny Ludlum Steel Corp.)

For free copy circle No. 34 on pestcard

Bonded Coatings

A 24-page manual details the preparation of metal surfaces for application of resin bonded lubricant coatings. (Alpha-Molykote Corp.)

For free copy circle No. 35 on postcard





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You Arbitrate It!

CLEANING PITS

From the files of

The American Arbitration Association

One day last summer, the foreman of a metal door manufacturing firm found himself short-handed. He wanted some grease pits cleaned under a few of the machines, but the general helpers who usually did that kind of work were on vacation. So he ordered a janitor to do it. The janitor and the union objected.

"That's not within the janitor's duties," argued the shop steward "If you want him to take on additional assignments of this kind you have to negotiate a new rate for his job."

"No we don't," answered the personnel director. "General unskilled work is already part of the janitor's job." He thereupon read to the union this job description from the collective bargaining agreement:

"Janitor: Performs various duties in accordance with an established routine or as ordered by foreman. Dusts and cleans offices, dispensaries and shop areas, empties waste baskets, cleans lavatories and drinking fountains, sweeps and scrubs floors and stairways. Cleans carpets. May do other unskilled jobs as required."

Eventually, the dispute went to arbitration. The chief issue was whether the last sentence, referring to "other jobs as required," covered the kind of work the foreman ordered the janitor to do. How would you rule?

The Arbitrator Ruled:

"The janitor job description defines a custodial job. The language 'may do other jobs as required' must be read in this context. The other unskilled jobs must be part of a job function which is related to the appearance or sanitary condition of the establishment." He concluded that cleaning grease-pits under machines, which had always been done by maintenance laborers, was not part of the janitor's job.

Caution: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, and testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

NEW BOOKS

Chilton Co., Philadelphia, has purchased from Greenburg, Publisher, New York, its entire list. Comprising almost 1000 titles, the Greenburg books reinforce a long list of Chilton works, including those covering technical metalworking subjects.

"Brass and Bronze Foundry Practice" organizes much material that's been available elsewhere into a neat, easy-to-read volume. Some of it may appear new even to the most experienced foundryman. What's particularly good about this book is that it's written for readers in nonferrous casting work and not for English professors. Though non-technical in language, it is nevertheless comprehensive in coverage. Practically every phase of brass foundry operations is reviewed by author H. M. St. John, a practicing foundryman for many years. 244 pp. \$8 per copy. Penton Publishing Co., 1213 W. Third St., Cleveland 13, Ohio.

"Porcelain Enameling Operations" is the standard industry text for the commercial application of porcelain enamel. 113 pp. \$4 per copy. Frit Div., Ferro Corp., 4150 E. 56th St., Cleveland 5, Ohio.

"Finding & Using Your Magic Emotion Power" makes interesting and informative executive reading despite its title and presentation. Though suffering from "too attractive" make-up and unintellectual editing, the text does contain many facts which could prove very helpful to harassed (normal) executives. One noteworthy chapter constructively deals with tension and psychological problems. The book could prove very helpful especially to young men in, or aiming at, important positions. 185 pp. \$4.95 per copy. Prentice-Hall, Inc., 70 Fifth Ave., New York 11.

inspection...

is this your wire rope problem?



Safety and economy can be greatly improved by methods described in LESCHEN RED-STRAND BULLETIN NO. 104

Without adequate inspection, a severely damaged rope might remain in service until sudden failure and thus bring disaster. Such danger will be foreseen and adequate safety measures adopted in plenty of time, however, wherever a well organized program of periodical inspections is maintained. Bulletin No. 104 gives detailed instructions for setting up and maintaining such a program, tells what to look for and what findings mean.

Copies sent free on request. Write to H. K. Porter Company, Inc., Leschen Wire Rope Division, St. Louis 12, Mo.

Red-Strand
WIRE ROPE

H. K. PORTER COMPANY, INC.

LESCHEN WIRE ROPE DIVISION

Consumers Demand Flexible Plants

Consumer wants vary from year to year, even minute to minute. Within a short period, consumers often demand hundreds of different styles, colors and models.

This taxes producer ingenuity and makes flexible setups a must.

Production of consumer products generally demands a plant that can turn out a variety of styles, designs and colors. The numerous paints, trims and upholstery wanted by buyers of automobiles is a good example. It means that the manufacturer must be able to build several hundred units, no two exactly alike. And this must be done without passing prohibitive casts along to the consumer.

Such a situation exists at Ford Motor Co.'s M-E-L Div., Metuchen, N. J. Here 90 pct of the Mercurys assembled are painted two or three pastel tones or a brilliant solid color.

Complex Paint Setup — The plant's spray painting facilities, designed by Binks Mfg. Co., Chicago, consist of a complex of mixing tanks, pumps, piping, pressure regulators, oil and water extractors and spray guns. This system can apply 1000 gal of paint in 16 colors daily.

It's practically impossible to supply such a variety of colors in this quantity without some kind of cen-



Paint lines at the plant consume 16 different colors daily.

tral system. Manpower costs of supplying multiple spray stations with such color variety would be impractical.

Paint Runs Like Water — Centralizing mixing, pumping and re-

plenishing under one roof, though under a much finer control, can be compared to the plant's water system. Wherever it's needed, the paint is available, much as water from a faucet.

Twenty air-operated pumps in the paint house provide 29 spray stations in the plant with paints of identical viscosity and color. Unused paint returns to recirculating tanks. Each of the 16 colors has its own pipe system and pump.

Joining

Method joins aluminum to stainless steel

Fabricating composite structures of aluminum and stainless steel, or other high-temperature resistant metals is possible via a newlydeveloped brazing technique.

Announced by Stewart-Warner Corp., this process takes advantage of lightweight, high heat transfer characteristics of aluminum alloys combining them with high strength and fatigue characteristics of stainless steels. The bond is gas and liquid tight; is resistant to instant thermal shocks from extreme low temperatures of -320°F to upwards of 400°F. Strength of the bond is greater in tension than that of the parent aluminum at both normal and the extreme temperatures. Being entirely metallic, the bond is unaffected by fungi, high humidity or organic materials.

Instrumentation

Gas Analyzers Improve Oven Safety, Output

Use of combustible gas analyzers in drying ovens not only assures safer operation; it also lets ovens work at higher temperatures. So states N. W. Hartz of Mine Safety



Z I N C STRIP AND WIRE

ZINC METALIZING WIRE
ZINC ACCURATELY ROLLED
for electric fuse elements

THE PLATT BROS. & CO., WATERBURY 20, CONN.

FORGINGS

ALL SIZES, prezied . . rolled . . extruded . . ferged to accurate specifications from carbon, olley, stainless steels and special metals. Medium metallurgical, die, heat-treating and rough mechining facilities.

Over 50 years of forging design and development
THE CANTON DROP FORGING & MFG. CO.
CANTON, OHIO

Appliance Co.'s instrument division. He points out that many such installations are now delivering two-fold advantages of safety and efficiency.

These instruments continuously record concentrations of flammable vapors in ovens. They guide either manual or automatic control of heat or ventilation to maintain safe operating conditions.

Measure Explosibility—Generally, calibrations are in terms of explosibility. Recorder graduations run from 0 to 100 pct of the lower explosive limit of the solvent being evaporated, or in a narrower range such as 0 to 50 pct lower explosive limit.

Usually monitors operate warning signals or actuate automatic emergency shutdown equipment if vapor content of oven air exceeds a preestablished limit.

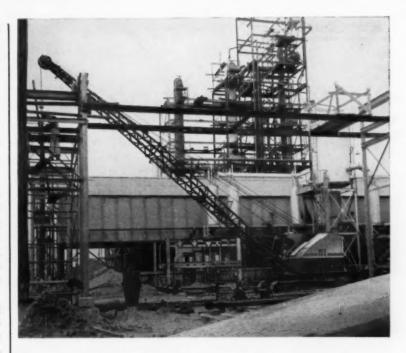
How It Works — Combustible gas analyzers operate by drawing an atmosphere sample over a heated platinum filament. Combustibles present burn upon contact with the wire. This raises its temperature and increases electrical resistance in proportion to the concentration of combustibles.

Barrier Falls — Until recently, such analyzers had been limited to solvent boiling points under 140°F. Strength of plastic insulators appreciably diminished above this.

This limitation no longer exists, thanks to late developments. Improved equipment uses a new type filament frame and housing which easily withstands drying oven heat. Ceramic parts substitute for plastic elements.

Adhesives

The American Welding Society is including data on adhesive bonding and the welding of plastics in Section III of the Welding Handbook, to be published in the fall of 1959. This national engineering society thus is giving official recognition to modern adhesives as structural joining materials.



WHAT SIZE DO YOU NEED?

There's a Bucyrus-Erie material handling crane built to meet your exact needs — to handle yard work, in-plant lifts, new plant construction, etc.

Each model is individually designed to handle jobs within its range at peak efficiency. You cut handling costs, get more work done in less time.

Bucyrus-Erie engineers constantly improve machines to provide you with the *most efficient equipment* to do a specific job. The Bucyrus-Erie performance record in industrial plants across the country speaks for itself.

It costs nothing to find out more about the machine you need to help increase yard efficiency. Fill in the coupon below for details.

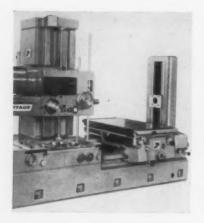


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New Production Ideas

Equipment, Methods and Services



Miller-Borer Serves Big and Small Shops

This horizontal milling, drilling and boring unit is a versatile, multipurpose machine. It's designed and built with small-shop versatility, but it can have use in bigger shops, too. Workpieces of many sizes, shapes and materials can be machined on the 3-in. spindle unit. Its construction and control arrangement permit fast positioning and handling in both long or short run lots. Power, spindle speeds and infinitely variable feed can be

selected carefully to provide the best combination for operations with large or small cutting tools. Strength, rigidity and precision are built-in features making the machine suitable for tool room use, general production or roughing work. Feed rate setting is shown on a feed rate dial and can be preset before engagement of the head, table, or saddle feed. (Portage Machine Co.)

For more data circle No. 36 on postcard, p. 121

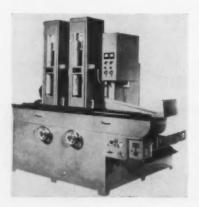


Air-tool Hose Snaps Back Away from Work

Of lightweight nylon, a new hose for use with pneumatic tools snaps back to keep out of the way of work. Tough, heat resistant and unaffected by oil, kerosene and gasoline, it can perform as a general purpose air hose for many industrial purposes. The hose withstands high operation pressures and abrasion. Smooth inside surfaces insure good air flow. The coiled form in combination with a portable attachment provides wide flexibility and mobility of position.

It is ideally suited, according to the manufacturer, for use with portable pneumatic equipment—air tools, air staple guns and spray guns—and is especially advantageous when incorporated in an overhead installation. Offered in 3/16-in. ID and ½-in. ID sizes, it comes in a standard 25-ft length, with flare fittings on each end. For shorter lengths, it can be cut easily and flared with a standard copper flaring tool. (Nycoil Co.)

For more data circle No. 37 on postcard, p. 121



Belt Grinder Does Two Jobs in One's Time

This precision abrasive belt grinder performs two or more high-speed grinding and finishing jobs in the time formerly required for a single operation. Unmachined surfaces, ground on a series of progressively finer-grit abrasive belts, can be finished to a fine polish to exacting tolerances in one continuous pass. For parts requiring rapid but exceptionally heavy stock removal, identical belts can be used on this

conveyor-type grinder to multiply production rates. The new model is available with from two to six or more individually-adjustable grinding heads. It offers an extensive capacity range, handling parts up to 5½-in. maximum width and 6½-in. maximum thickness. The machine's conveyor belt is powered by a ½-hp variable-speed motor. (Engelberg, Inc.)

For more data circle No. 38 on postcard, p. 121



Shrink caused leakage...

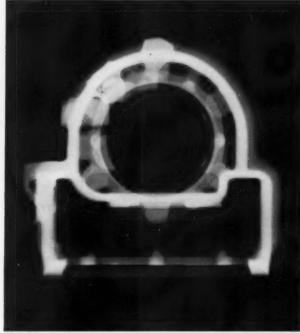
Radiography showed how to correct it

This casting is the gear housing of a vital air turbine-driven power supply produced for the Utica Division of Bendix Aviation Corp. for use in jet-age aircraft. It must operate at temperatures up to 300°F with utmost dependability.

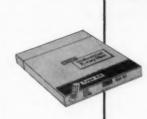
Seepage of oil through the shell was a recurring problem. And this is where radiography came in with a double-barreled assist. First, radiographic examination of the rough castings provided information to help determine whether the castings would prove acceptable when machined — before more than 150 machining operations were performed. Second, the radiographs revealed the cause of the difficulty—internal shrinkage—and disclosed a recurring pattern which led to placing chills so as to overcome it.

Result: a critical part became a routine production item with substantial savings in time and costs to both foundry and manufacturer.

If you would like to know how radiography can improve your own operations, talk it over with your x-ray dealer—or the Kodak technical representative.



Radiograph of rough casting for air turbine-driven power supply gear housing.



The new Kodak Industrial X-ray Film, Type AA, gives you these advantages

- Reduces exposure time—speeds up routine examinations.
- Provides increased radiographic sensitivity through higher densities with established exposure and processing technics.
- Gives greater subject contrast, more detail and easier readability when established exposure times are used with reduced kilovoltage.
- Shortens processing cycle with existing exposure technics.
- Reduces the possibility of pressure desensitization under the usual shop conditions of use.

Kodak Industrial X-ray Film, Type AA, is now available with or without interleaving paper, as you may desire,

EASTMAN KODAK COMPANY X-ray Division · Rochester 4, N. Y.

Kodak



Vertical Profiler Features Pre-set Speeds

Incorporating spark gap sensing elements proved on the company's milling machines, this 360° profiler operates from a sheet steel profile template. It produces any two-dimensional straight-line or irregular contour shape at speeds up to 60 ipm. Far closer accuracies than attainable by earlier profiling methods are possible, its developer states. A unique feature of the machine is: it traces at a pre-set constant surface

speed. This results in fine surface finishes and assures long cutting tool life, too. Exceptional accuracy of the machine is attributed to extreme tracer sensitivity coupled with backlash-free drives to the table and spindle slide. The two spark gap pickups in the tracing head are so sensitive that it takes only 0.0002-in. stylus deflection to activate the table and slide. (Pratt & Whitney Co., Inc.)

For more data circle No. 39 on postcard, p. 121



Dual Bandsaw Works Upright or Horizontal

Performing dual duty, this machine is both an upright band saw and a horizontal cutoff unit. As a horizontal cutoff machine, it handles rounds up to 6 in., rectangular shapes up to 6 x 10 in. and 5 x 5 in. at 45°. It easily converts to an upright saw. The user merely swings the head to vertical position, and installs a work table. Selective speeds are 76, 141 and 268 fpm. The blade (½ x 0.025 x 93½ in.)

is driven by a ½-hp ball bearing motor. It has a manual starter featuring an automatic stop when used as a horizontal cutoff saw. Frame and bed are of welded steel construction. The saw also has a quick action vise and adjustable blade guides. Disc type idler and drive wheels run on grease sealed ball bearings. Weight: 220 lb. (Wells Mfg. Corp.)

For more data circle No. 40 on postcard, p. 121



Right-angle Bore Gage Fits in Tight Area

This right angle type dial bore gage needs but a minimum amount of space in front of bore openings. Thus, it's useful for measuring work in jig borers, internal grinders and horizontal boring mills where other types couldn't apply or would involve excessive backing off of quill or spindle. It is useful also for subassemblies in which there is re-

stricted access to borers. The manufacturer points out a safety advantage; the gage is a real "knuckle saver" when work in a machine tool is being measured. Hands are kept away and hence protected from sharp tools or turning wheels. Six sizes cover a 3% to 61/8-in. range. (Standard Gage Co.)

For more data circle No. 41 on postcard, p. 121



Wrench Boasts New Impacting Mechanism

High-speed photography in conjunction with a study of tool impacting operations led to development of this impact wrench. Analysis of speed films at the manufacturer's research and development laboratory revealed some heretofore unknown data. This resulted in design of an entirely new impacting

mechanism. The wrench is available in two models. Both feature light weight and small dimensions. They rate at ¾-in. nut-setting capacity. One model is equipped with ¾-in. square drive; the other has a ¾-in. built-in hexagon slip chuck. (Gardner-Denver Co.)

For more data circle No. 42 on pestcard, p. 121



Consistent Quality Reduces Costs.













J. Schwartzman Mfg. & Supply Co. achieves savings 5 ways with KEYSTONE XI, WIRE

J. Schwartzman, who heads the manufacturing company bearing his name, is a strong booster of Keystone "XL" Wire. His plant at North Hollywood, Calif., manufactures millions of fasteners of every shape and description. He points out that Keystone "XL" Wire helps cut costs and improves quality in these five ways:

- Increased die life
 Longer production runs
- Better surface for plating Fewer rejects
- · Excellent heat treating qualities because of consistent chemical analysis

Here's an example of how Keystone "XL" Wire's flowability and consistent quality have reduced costs at Schwartzman Mfg. & Supply Co.: a particular square head set screw formerly cost \$9.00 per 1000 to produce . . . now with Keystone "XL" Wire the cost is reduced to \$3.50 per 1000 . . . a

savings that Schwartzman passes on to the customer. Flowability is the secret.

Increased savings and quality like this may be possible on the fasteners or parts that you manufacture, too. It's easy to find out . . . just call your Keystone Representative for the complete story. He will help you investigate the many money-saving applications of Keystone "XL" Wire.

Keystone Steel & Wire Company, Peoria, Illinois



Keystone Steel & Wire Company Pearia 7, Illinois

COLD HEADING FACTS FOLDER . . . send coupon today! New folder discusses uses, applications, methods, technical facts, wire requirements.

WIRE FOR INDUSTRY

SILCOMANGANESE SUICONANGANESE MANCOLAW SILICOMANCAMANO SHIP AND SHIP AV SILICOMANOANESE. VAVCOPRESE - VAVCOPRESE

YOU GET FAR-REACHING RESULTS WITH VANCORAM SILICOMANGANESE!

Yes, it is an efficient and economical way to add manganese and silicon to irons and steels. But that's not all. Vancoram Silicomanganese acts as a furnace block, desulphurizer and deoxidizer, too! There are three types, to meet all requirements—1.50%, 2.00% and 3.00% carbon grades, all with 65/68% manganese. Or, try the convenient, square-shaped Briquettes, each containing 2 lb. manganese, ½ lb. silicon. Your nearest VCA Office would be pleased to offer specific recommendations about the ideal Vancoram Alloy or Alloys for the steels and irons you manufacture.

Producers of alloys, metals and chemicals



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NEW EQUIPMENT

Stamp Holder

Protection for the user together with sure positioning of the stamp on round or flat pieces are provided by this metal stamp holder. Of impact-resistant rubber, it resists damage from foul hammer blows and other rough handling. Design of the holder includes a V-slot in the bot-



tom. This enables the user to make clean, even markings lengthwise on round products. Holders can accommodate almost any size or make stamp with single or multiple characters. A special spring plunger retainer screw holds the stamp firmly in the holder and allows quick changing of the stamp. (M. E. Cunningham Co.)

For more data circle No. 43 on postcard, p. 121

Flash Welder

Rated at 400-kva, an automatic machine flash welds hot-rolled steel rings 3/8-in. thick up to 8-in. wide. It also welds flat stock. Air operated alligator type clamps provide the necessary clamping force to hold work. Upset force of approximately 38,000 lb is derived from a double acting hydraulic cylinder. (Federal Machine & Welder Co.)

For more data circle No. 44 on postcard, p. 121

Beryllium Bolts

Forged pure beryllium bolts exhibit fine elevated temperature properties, and a high strength-toweight ratio. Temperature properties of beryllium make it a desir-

... custom built

ATLAS

diesel-electric

ORE-TRANSFERS





75-ton diesel-electric transfer, single hopper, bottom dump with air-operated discharge gates and double-end control.

Atlas builds steel plant cars to fit the exacting needs of each user. And each is constructed with the simplicity and ruggedness that defies obsolescence.

SINCE 1896 ...

Producers of Scale Cars, Ore-Transfers, Coal Larries, Door Machines, Coke Quenchers...





Sina

CAR & MFG. CO.

1100 Ivanhoe Rd. . Cleveland 10, Ohio

PUNCHES · DIES · RIVET SETS RIVETER COMPRESSION



1420-34 So. ROCKWELL STREET CHICAGO 8. ILLINOIS



with special KENCO ELECTRO-SAFE PUNCH PRESS

Eighty inches long-extruded aluminum strips are punched, dimpled and both ends slotted at the rate of 350 per hour on a special Kenco, Electro-Safe Punch

350 per hour on a special KENCO, ELECTRO-SAFE PUNCH PRESS. Die changes permit six different parts to be handled on this machine, one of which is 16 feet long. The Press engineered and built by KENCO utilizes three Standard KENCO 5 ton presses arranged with a double drive on the Center Press with heavy connecting shafts which evenly distribute the torque loading. The ELECTRO-SAFE SYSTEM prevents accidental tripping because the motor is always "deed" except during. because the motor is always "dead" except during a stroke. A dial controls "Single Stroke," "Continuous

Stroke," or "Inching" operation.
You too can reduce your punching costs. Check with Kenco for Suggestions—there's no obligation.

Write for literature covering 2, 5, 8 and 15 ton Standard and Deep-Throated Models.





Job Facts: Machine: Special Kenco Punch Press • Material: Aluminum - 80" long Extrusion • No. of Parts: 6 - one is 16 feet long • Operation: 5 - Punching, Dimpling, Slotting Ends • Production: 350 per hour.

KENCO MANUFACTURING CO

5211 Telegraph Rd., Los Angeles 22, Calif.

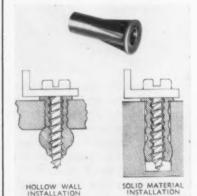
NEW EQUIPMENT

able material for aircraft and missile uses. But they also provide a stumbling block in its successful forging. A special forging process, however, now permits forming fasteners without disturbing their molecular structure. (Voi-Shan Mfg.

For more data circle No. 45 on postcard, p. 121

Screw Anchor

Called "Wally," a new plastic screw anchor makes a permanent mounting in any material. But it's designed especially for fastening screws in bottomless materials such as plasterboard, plaster, sheetrock, etc. A flange or collar keeps the



anchor from falling through bottomless holes. Four gripper-fins prevent it from turning when inserting the screw. It can be used with any No. 6, 7, 8, 9 or 10 screw having a tapered thread. (Houlub Industries,

For more data circle No. 46 on postcard, p. 121

Scrap Shear

Boasting a 750-ton capacity, a new hydraulic scrap shear is designed to increase output and reduce cutting costs. It cuts approximately 150 tons of miscellaneous scrap or 250 tons of uniform plate scrap in an average 8-hour day. The shear, which has a force of 750 tons, will cut up to 7-in. diam steel rounds. It will also process tanks, subway cars, etc. All movements are pushbutton controlled from the operator's station. Controls for the gathering cylinder have adjustments for cutting lengths from 18 to 60 in. in 3-ft increments. (Watson-Stillman Press Div., Farrel-Birmingham Co.) For more data circle No. 47 on postcard, p. 121

Triple Punch Press

Designed for exceptionally long progressive die work a new triple punch press also punches, forms and blanks where extremely long die sets are used. Equipment consists of three 5-ton punch presses mounted on a rugged frame. Crankshaft and rams operate synchronously. (Kenco Mfg. Co.)

For more data circle No. 48 on postcard, p. 121

Weld-gun Valves

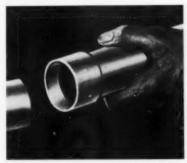
New pilot-operated air control valves integrally mount on most popular makes of portable gun welders. Located directly on the welding gun cylinder, the valves provide fast gun response for excellent welds. Extremely compact, the

gun welder valve facilitates maneuvering the welder in confined areas. Use of a single air supply hose contributes to easy handling. Its maker says its reduces the possibility of excessive air consumption and slow operating cycles associated with remote mounted valves and long connecting hoses. (Valvair Corp.)

For more data circle No. 49 on postcard, p. 121

Pipe Connector

Brazed or welded connection of stainless piping is done easily with



a new aligning connector. The stainless connector fits over the ends of pipe or fittings to provide a sockettype joint. It fits snugly to hold pipe and fittings in position until welding or brazing secures the connection. (Horace T. Potts Co.)

For more data circle No. 50 on postcard, p. 121

Plate Handler

Designed specifically for feeding high speed shearing or press brake operations, a new automatic plate handler has a 5000-lb capacity. A rotatable lift beam permits direct feeding for either end or edge shearing or forming. (Noble Co.)

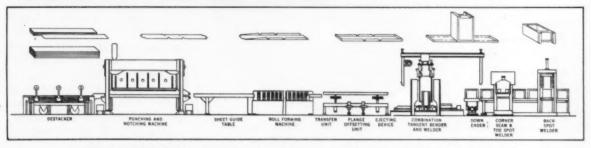
For more data circle No. 51 on postcard, p. 121

New Alloy

A new nickel-base alloy in sheet or other wrought forms serves well in the range of 1200 to 1800°F. Produced under vacuum melting conditions, the alloy comes in sheet stock, as rolled or polished, in sizes to 48 x 120 in., thicknesses down to 0.010 in. Wire, including weld wire and wrought bar stock, is also

EXPLORE

production economies possible by combining: assembly, metal forming and welding.



COMPLETELY AUTOMATED METAL FORMING AND WELDING LINES

This is representative of the completely integrated lines now built by T-W, who also offers the largest selection of standard and specially designed resistance and arc welding machines. Taylor-Winfield's line now includes the

metal-forming and work-handling equipment formerly built by Struthers-Wells. Call your nearby T-W representative for specialized help in improving your production rate and quality.

SALES and SERVICE

BALTIMORE CHARLOTTE CHATTANOOGA CHICAGO CLEVELAND DALLAS DAYTON DENVER



TAYLOR-WINFIELD Corporation

ELECTRIC RESISTANCE AND ARC WELDING MACHINES
METAL-FORMING AND WORK-HANDLING EQUIPMENT

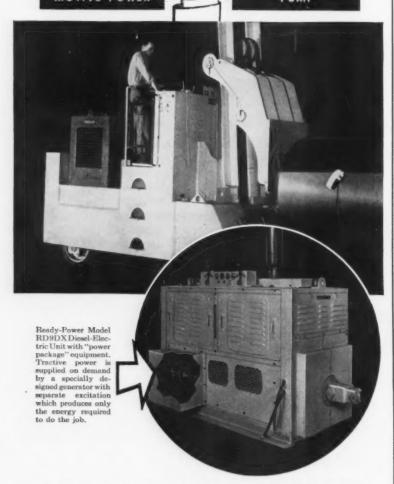
SALES and SERVICE

DETROIT
LOS ANGELES
PHILADELPHIA
PORTLAND, OREGON
ROCHESTER
ST. LOUIS
STAMFORD
OAKVILLE AND
WINDSOR, ONTARIO



1 GENERATES TRUCK MOTIVE POWER

2 DIRECT-DRIVES HYDRAULIC PUMP



Ready-Power makes diesel-electric power doubly effective with a newly developed "power package" designed specifically for use with its "RD" Series Power Units. This remarkable new concept allows the unit to operate at constant speed, no load to full load, yet supplies full range of tractive power on demand and produces continuous hydraulic power without need for intermediate electric motors. The last word in simplicity, this new "power package" eliminates contactor failure, minimizes maintenance, assures maximum operating economy for electric trucks up to 200,000 lb. capacities. Write for complete information.

EADY-POWER

The READY-POWER Co., 3822 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electic Power Units for Industrial Trucks

NEW EQUIPMENT

available. Boasting extreme strength at elevated temperatures, the alloy possesses good formability characteristics and is readily machinable. Drawing, bending, spinning, and other conventional shaping methods can be used with it. (Cannon Muskegon Corp.)

For more data circle No. 52 on postcard, p. 121

Automatic Shear

This special shearing machine shears electrolytic copper as part of an automatic cut-off line. Table height from the mounting pads is only 221/2 in. to match other equipment. The shear is 4 ft 3 in. between housings and has a 6-in. gap.



It has electric clutch control and operates at 65 strokes per minute. The usual holddown system and gages are omitted as they are unnecessary. Machined openings in the table permit the installation of stock feeding equipment. Such standard features as automatic lubrication, accurate shearing with one knife clearance and all steel construction have been retained. (Cincinnati Shaper Co.)

For more data circle No. 53 on postcard, p. 121

Shot Peening

For increasing strength of crankshafts, a machine shot peens crankshafts up to 16-in. diam swing, up to 7-ft long. No jigs or fixtures are necessary because main journals lower directly onto drive belts that both support and rotate the workpiece. An automatic peening cycle frees its operator except for set-up, loading, and unloading. Crankshaft is shot peened completely by two oscillating nozzles as they travel the length of the crankshaft for one round trip. (Metal Improvement Equipment Co.)

For more data circle No. 54 on postcard, p. 121

Specimen Machine

This power-driven unit rapidly machines tensile, fatigue and other physical test specimens. Test specimens from light 0.00025 in. foil or



heavy 0.500 in. plate can be precision machined from a wide range of metals including aluminum, stainless steel, copper, titanium, uranium, lead and the super alloys. Unskilled technicians can consistently duplicate test specimen configurations within tolerances of ± 0.0005 in. The unit machines specimens in as little as 60 seconds. (Sieburg Industries, Inc.)

For more data circle No. 55 on postcard, p. 121

Foundry Shakeout

Fast movement of flasks and sand molds from easting machines is this foundry shakeout unit's job.



A key feature of the 4x6-ft unit is its 6° slope starter deck and 3° slope main deck. The starter deck

speeds flasks or molds onto the main deck for shakeout. The shakeout has a ½-in. throw, a No. 2 vibrating mechanism, 1 x 1-in. steel deck bars, and 6-in. high sides. It accommodates 24 by 30-in. flasks. (Allis-Chalmers Mfg. Co.)
For more data circle No. 56 on postcard, p. 121

Punch Press

Designed in three shut heights with throat depth punching to the

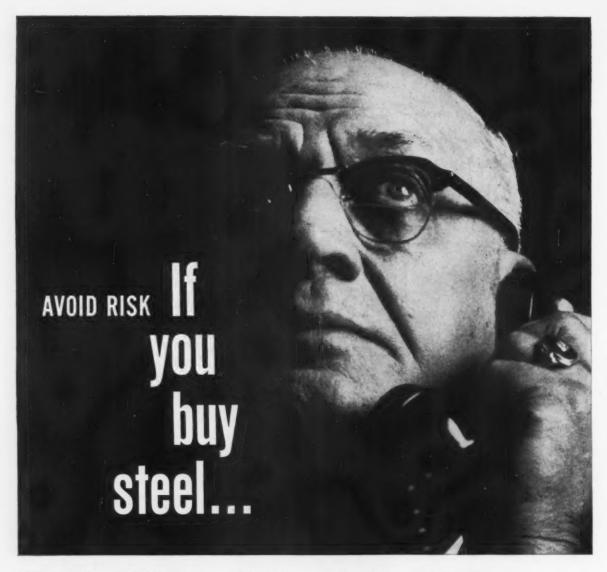
center of up to 24-in. diam circles, new plain OBI presses serve many uses. Standard shut height exclusive of bolster plate is 9 in. The press is also available in 12- and 15-in. shut heights, exclusive of bolsters. Plain types deliver approximately 210 strokes per minute. The 8-ton presses also come in back geared models having speeds of approximately 100 spm. Bed area measures 8 x 11 in. (Benchmaster Mfg. Co.) For more data circle No. 57 on postcard, p. 121



ERIE BOLT & NUT CO.

Representatives In Principal Cities

Erie, Pennsylvania



USE OUR SERVICE to maintain production continuity...

Your steel is quickly available from our large inventories, deliveries scheduled in advance of production needs. You get your steel when you want it, delivered, cut to exact size and ready for production. And, your losses brought on by obsolescence or mistakes in forecasting are reduced. We assume these risks for you. That's good business.

You also tie up less capital in inventory. You save costs of space. Your equip-

ment costs for storing, handling, cutting are reduced. You keep your insurance, taxes and interest costs to a minimum.

Use this chart to compare all of your costs of possession with the cost and freedom-from-risk of buying steel from your Steel Service Center. Or, get the booklet What's Your Real Cost of Possession for Steel from your nearby Steel Service Center. American Steel Warehouse Association, Inc., 540 Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION
FOR STEEL IN YOUR INVENTORY

Per ton delivered

Cost of capital:
Inventory

Space

Equipment

Cost of operation:

Space

Materials handling

Cutting & burning

Scrap & wastage

Scrap & wastage
Obsolescence
Insurance

Taxes

TOTAL_____COST OF FREEDOM-FROM-RISK STEEL

FROM YOUR STEEL SERVICE CENTER
Per ton, cut-to-size, and delivered

TOTAL



The American Steel Warehouse

.YOUR STEEL SERVICE CENTER

The Iron Age Summary

Look for July Dip, August Rise

Steel market outlook for July is none too reassuring following June bulge.

But observers believe a slow, steady improvement will begin in August.

• There's no stampede among steel users to beat the expected August price increase. The price hedgers apparently shot their bolt in June, when there was a noticeable bulge in steel output.

The outlook for July is anything but cheering. Some June business carried over into the early weeks of the month, but it was not enough to avoid the predicted July slump.

April Low — Still, it looks as though the low point in the steel recession probably was reached last April, when the ingot rate dipped to less than 48 pct of capacity. The July slump is not expected to be that severe.

Meanwhile, rumors have been circulating that some mills had been planning to ship June carryover orders at June prices even before U. S. Steel had decided against a July 1 price boost. Whether true or not, this competitive angle is fast fading from the picture, and the stage is being set for the expected August increase.

August Pickup—The steel business is due for a slow but steady upturn beginning in August. Part of this pickup will be due to renewed ordering by the auto companies, some of whom have already begun shutdown of production lines preliminary to output of 1959 models.

Steel men report that the June order bulge came from a wide cross-section of steel users. But little if any came from the automakers, who have been holding their inventories down to hand-to-mouth levels.

Bright Spots—The mills are looking for an improvement soon in demand for oil country goods and linepipe. The continuing pickup in construction awards also is building up the hopes of mills which produce construction steel products.

Some mills are already writing off July as the month of the great relapse and are now pinning their hopes on August. The rush of price hedging came to a halt on July 1. Surprisingly, there were few customers who requested June delivery that didn't get it. Some producers estimate they lost less than 1000 tons through inability to make delivery.

Auto Outlook—In August, auto plants are expected to come in fairly heavy for new model production. Vacation season will be dwindling. Inventories will still be low and general industrial output should be resuming its recovery.

Scrap—For those who look on the scrap market as a steel barometer, the market shows new strength, particularly in the Midwest.

As a result of a \$3 rise in Chicago, and a \$1 upward move in Pittsburgh, The IRON AGE No. 1 Heavy Melting Composite Price moved up from \$35.17 to \$36.50. A generally firmer tone is noted.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 1,458	Last Week 1,376	Month Ago 1,728	Year Ago 2,023	
Ingot Index (1947-1949=100)	90.7	85.7	107.6	125.9	
Operating Rates	70.7	93.7	107.6	123.7	
Chicago	61.0	64.0*	71.0	83.0	
Pittsburgh	50.0	51.0*	58.5	87.0	
Philadelphia	53.0	53.0*	66.0	89.0	
Valley	35.5	31.0*	49.0	78.0	
West	66.0	60.0*	80.0	99.0	
Cleveland	38.0	25.0*	44.0	77.0	
· Buffalo	39.0	41.5	54.0	88.0	
Detroit	56.0	51.0*	62.0	97.0	
South	50.5	60.5	60.5	93.0	
South Ohio River	66.0	66.0*	59.0	65.0	
Upper Ohio River	77.0	70.0*	78.0	81.0	
St. Louis	86.5	78.5*	89.0	80.0	
Northeast	35.5	35.5	35.5	50.0	
Aggregate	54.0	51.0	64.0	79.0	

*Revised

Prices At a Glance

	This	Week	Month	Year
3	Week	Ago	Ago	Ago
cents per lb unless otherwise	e noted)			
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.670
Pig Iron (Gross ton)	\$66.49	\$66.49	\$66.49	\$64.56
Scrap, No. 1 hvy				
(Gross Ton)	\$36.50	\$35.17	\$35.50	\$54.50
No. 2 bundles	\$26.83	\$25.83	\$26.50	\$44.83
Nonferrous				
Aluminum ingot	26.10	26.10	26.10	27.10
Copper, electrolytic	25-26.50 2	5-26.50	25.00	29.25
Lead, St. Louis	10.80	11.30	10.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	94.00	94.50	95.125	97.125
Zinc. E. St. Louis	10.00	10.00	10.00	10.50

Tip From a PA: Don't Speculate

It's not the function of a buyer to gamble on future prices, says this Philco executive.

There is plenty enough to do keeping inventories trimmed to economy levels.

■ The top buying executive for one of the nation's largest makers of television sets and appliances advised his management against a policy of buying steel as a hedge against possible price increases.

"Speculation is not a purchasing agent's business," asserts Wilson H. Oelkers, vice president-purchasing, Philco Corp. "We at Philco have no sustained interest in buying for the future. Supply certainly is no problem today and hasn't been for a long time," he adds.

Current Market Aspects—"Buying in advance is the easy way to do your purchasing," comments Mr. Oelkers. "But it's not necessarily the most economical — especially in today's market."

If you buy more than your immediate production needs, you have a problem of financing and warehousing, he explains. And if the economy continues to soften, you may wind up having paid a higher price for the stored materials.

Philco currently is doing business with about 6000 vendors and buys about six or seven times that number of parts. The bulk of the steel it buys is cold-rolled sheets.

Likes 6-Week Cycle — Ideally, Philco is striving to achieve a sixweek cycle in its purchasing operations. A cycle begins when management authorizes a purchase and ends when the end product is ready to leave the shipping platform.

The cycle now is somewhere between seven and 11 weeks, and Mr. Oelkers admits that it will be a mighty tough job trimming the schedule further.

"There are corollary problems," he says. "Historically, electronics is a fall business. If the fall spurt does come, we have to have supplies on hand to meet it. If we do buy and the spurt doesn't come, then we're stuck with a lot of inventory."

Timing Important — The job of keeping inventories trimmed has other pitfalls. One is discounts on quantity purchases. Suppliers are continually dangling low-price bait in attempts to lure customers into buying larger quantities.

"In this respect, it sometimes is quite difficult to tell when it is safe to buy extra material and when it isn't," Mr. Oelkers says.

Price Not Everything — While price is an important factor in determining what to buy and from whom, it isn't necessarily the deciding factor, he continues. "We constantly have the problem of quality, and we are constantly looking for suppliers who can deliver a better component.

"In the appliance and television business you must recognize that it isn't material that is important; it's the cost of the part as it goes out of our factory and the cost to keep it operating satisfactorily in the field.

What does Philco look for when it seeks a supplier? A vendor, says Mr. Oelkers, must:

Be able to service a lot of plants in various locations.

Be adequately financed.

Have fast, up-to-date machinery to meet production needs.

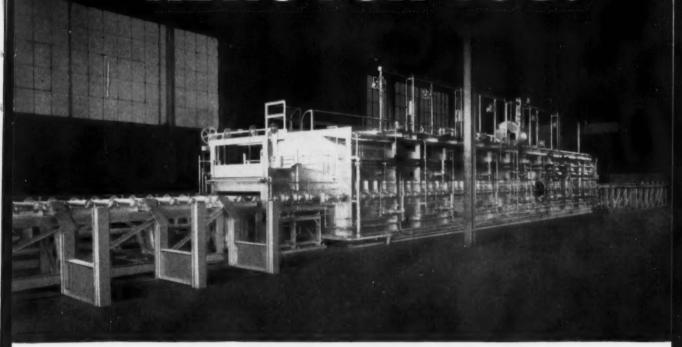
Have products priced competitively.

Keep abreast of and deliver to our engineering and quality requirements.



PHILCO'S OELKERS: Prices are important, but not the only factor.

NEWS FOR YOU!



positive uniformity

WITHIN EACH BAR END TO END THROUGHOUT
THE ENTIRE
SHIPMENT

The most modern Continuous roller hearth, radiant tube, Controlled Atmosphere Carbon Correction Furnace is now in operation at our Chicago works. Carbon Correction of decarburized surfaces can be accomplished with a suitable atmosphere during the heating cycle to provide bars for induction hardening applications.

This facility assures you of uniform microstructure and uniform machining properties.

Our metallurgical staff is always at your service to offer any assistance you may require.

For the Ultimate in Cold Finished Carbon and Alloy Steels—specify WYCKOFF.





General Offices: Gateway Center, Pittsburgh 30, Pa.

Works: Ambridge, Pa., Chicago, Ill., Newark, N.J., Putnam, Conn.

WYCKOFF STEEL PRODUCTS: Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares • Wide Flats up to $12\%'' \times 2\%'''$ and $14'' \times 1\%''$ • All Types of Furnace Treated Steels

Linepipe Customers Resume Buying

Market for large diameter pipe, quiet since the Memphis decision last fall, shows signs of life.

Producers in the Midwest have picked up orders for more than 300,000 tons of pipe.

■ The linepipe market, largely dormant since the Memphis decision last November, shows signs of revival.

The court ruling then that the usual method of granting rate increases to pipeline operators was illegal brought line construction to a screeching halt. As a result about a million tons worth of pipeline orders were wiped off steel company books.

Now, however, pipeline operators are making rate arrangements with customers which can be adjusted later if necessary. Work on pipelines is resuming and pipe production is increasing.

Midwest mills, for example, picked up major orders for large diameter welded pipe totaling over 300,000 tons in recent weeks. One project calling for 200,000 tons of pipe will extend from Texas to Illinois. Construction on another \$64 million line from Louisiana to Georgia is expected to begin in August. Its pipe requirements are about 65,000 tons.

Even with this improvement pipe mills are still operating under 50 pct of capacity. Most products are slow. Butweld is tapering off after a fair June. Oil country seamless is dragging but producers feel the corner has been turned. They look for an

increase in shipments during the second half of the year as customer inventories run out.

Sheet and Strip—Most producers predict a 25 pct drop from June order levels this month. New orders for sheet and strip are coming in slowly. Automotive steel buyers are sending in both July and August orders to mills, but tonnages for neither month are spectacular.

Galvanized sheet sales, while they may slip a little this month, are still pacing the market. Demand for galvanized for grain bins and other farm applications is strong. In addition, heavy tonnages are required for culverts.

Plates and Shapes—Plate producers continue living with an inand-out market, now stripped of the stimulus of June hedge buying. A large Eastern mill estimates its July tonnages will be below half the available capacity. Another producer in the same area believes June orders were gained only at the expense of July rollings.

Pittsburgh producers say July plate bookings are running about 25 pct below May and June levels.

PURCHASING AGENT'S CHECKLIST

Construction equipment sales take unexpected upturn. P. 65

Prospects are slim for revival of government price and business controls.

P. 81

Advance cost planning can make possible extra profits. P. 99

They expect some pickup in August.

Structurals are doing a little better than plate. However, mill rolling schedules are still thin. Fabricators are concerned about the outcome of the steel price situation. They are bidding too low on current jobs to absorb added steel costs.

West Coast structural mills report orders are building up, in a small but steady way, for heavier sizes. User inventories in the 6-in. and up structural range are very low.

Bar—Hot-rolled bar producers expect a drop in activity this month following the pickup in June. June shipments ran 10 pct better than May's, Pittsburgh mills report. They believe July tonnages will be down that amount or more.

Orders for bar in the Cleveland area are showing isolated signs of strength, but overall the market is weak. July production should be around 40-45 pct of capacity.

Cold finished bar producers at Chicago are cutting back their output this month with some mills going on a four-day week.

Wire Products—Many wire mills are closing down during the first half of this month for plant vacations. Producers are encouraged, however, about the sales outlook for the balance of 1958.

Roller Bearing Prices—Timken Roller Bearing Co. has decided to hold the price line on its products. The company has announced there will be no increase in the price of most bearings under 7 in. ID until Oct. 1, 1959. This includes only prices charged original equipment manufacturers. On larger bearings Timken is guaranteeing present prices through Oct. 1, 1958. Other bearing manufacturers are expected to follow Timken's lead.

Ensley Works Closed—All operations at the Ensley Works of U. S. Steel's Tennesee Coal & Iron Div. at Birmingham have been down since July 7 for repairs and installation of new equipment. Company officials estimate the work will require at least a month.

COMPARISON OF PRICES

(Effective July 7, 1958)

Steel prices	on this	page are	the average	of various	f.o.b.	quotations
of major pr	oducing	areas:	Pittsburgh,	Chicago,	Gary.	Cleveland,
Youngstown.						-

Youngst	own.									
	advances			week	are	printed	in	Heavy	Type:	
declines	appear in	Italia	28.							

decines appear in reduce.	July 8 1958	June 30 1958	June 10 1958	July 9 1957
Flat-Rolled Steel: (per pound)	2000	4000	2000	
Hot-rolled sheets	4.925€	4.925€	4.925€	4.925€
Cold-rolled sheets	6.05	6.05	6.05	6.05
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.60
Hot-rolled strip	4.925	4.925	4.925	4.925
Cold-rolled strip	7.17	7.17	7.17	7.17
	5.12	5.12	5.12	5.12
Plates, wrought iron	18.15	13.15	13.15	18.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base bo	x)			
Tinplate (1.50 lb.) cokes	\$10.30	\$10.30	\$10.30	\$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per nound)				
Merchant bar	5.425¢	5.425c	5.425¢	5.425¢
Cold finished bar	7.30	7.30	7.30	7.30
Alloy bars	6.475	6.475	6.475	6.475
Structural shapes	5.275	5.275	5.275	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.45	14.45	14.45	14.45
Wire: (per pound)				
Bright wire	7.65¢	7.65€	7.650	7.65¢
Rails: (per 100 lb.)		00 500	00.000	AT 202
Heavy rails	\$5.725	\$5.525	\$5.525	\$5.525
Light rails	6.50	6.50	6.50	6.50
Semifinished Steel: (per net ton) Rerolling billets	877.50	\$77.50	877.50	\$77.50
	77.50	77.50	77.50	77.50
Slabs, rerolling	96.00	96.00	96.00	96.00
Forging billets Alloy blooms, billets, slabs	114.00	114.00	114.00	114.00
the state of the s		114.00	114.00	484.00
Wire Rods and f kelp: (per pound			0.004	0.124
Wire rods	6.15¢ 4.875	6.15¢ 4.875	6.15¢ 4.875	6.15€ 4.875
Skelp	4.010	4.010	4.010	4.010
Finished Steel Composite: (per		. 0054	2.0074	E nema
Base price	5.967€	5.967€	5.967€	5.967¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	July 8 1958	June 30 1958	June 10 1958	July 9 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila		\$70.97	\$70.97	\$68.88
Foundry, Valley	66.50	66.50	66.50	65.00
Foundry, Southern Cin'ti	73.87	73.87	73.87	67.17
Foundry, Birmingham	62.50	62.50	62.50	60.17
Foundry, Chicago	66.50	66.50	66.50	65.00
Basic, del'd Philadelphia	70.47	70.47	70.47	68.38
Basic, Valley furnace	66.00	66.00	66.00	64.50
Malleable, Chicago	66.50	66.50	66.50	65.00
Malleable, Valley		66.50	66.50	65.00
Ferromanganese 74-76 pct Mn.	00100			
cents per lb\$	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross	ton)			
Pig iron	\$66.49	\$66.49	\$66.49	\$64.76
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$38.50	\$37.50	\$37.50	\$56.50
No. 1 steel, Phila, area	33.50	33.50	33.50	55.50
No. 1 steel, Chicago	37.50	34.50	35.50	51.50
No. 1 bundles, Detroit	31.50	31.50	28.50	47.50
Low phos., Youngstown	39.50	38.50	37.50	54.50
No. 1 mach'y cast, Pittsburgh.	48.50	48.50	47.50	58.50
No. 1 mach'y cast, Phila	47.50	47.50	47.50	56.50
No. 1 mach'y cast, Chicago	46.50	45.50	47.50	50.50
Steel Scrap Composite: (per gro	ss ton)			
No. 1 hvy, melting scrap		\$35.17	\$35.50	\$54.50
No. 2 bundles	26.83	25.83	26.50	44.83
Coke Connellsville: (per net ton	at over	n)		
Furnace coke, prompt	\$15.38	\$15.38	\$15.38	\$15.38

Nonferrous Metals: (cents per pound to	large buye	rs)	
Copper, electrolytic, Conn 25-26.50	25-26.50	25.00	29.25
Copper, Lake, Conn 25.00	25.00	25.00	29.25
Tin. Straits, N. Y 94.00†	94.50	95.125	97.12
Zinc, East St. Louis 10.00	10.00	10.00	10.50
Lead, St. Louis 10.80	11.30	10.80	13.80
Aluminum, virgin ingot 26.10	26.10	26.10	27.10
Nickel, electrolytic 74.00	74.00	74.00	74.00
Magnesium, ingot 36.00	36.00	36.00	36.00
Antimony, Laredo, Tex 29.50	29.50	29.50	33.00

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Market Takes On Stronger Tone

There is still no strong demand for scrap, but dealers may have won battle to hold or strengthen the price line.

The trade is convinced that better things are coming in August, and will wait for them.

■ Dealer resistance to lower prices apparently is making its weight felt. Where purchases are made, they are bringing equal or higher prices, and attempts to break prices again are meeting with no success.

A significant upward jump in Chicago stands out as the leading price development. Purchases by several mills moved primary grades up \$3, with other grades moving up on the strengthening market.

Pittsburgh, Cleveland and the Valley figured in openhearth price increases, while in Birmingham electric furnace grades moved up.

On the East Coast, the market is lethargic, with some slight hope for export.

Users of the Chicago and Northwestern Railroad will get a slight break on freight rates. The line, according to the Institute of Scrap Iron & Steel, has agreed to substitute for a 40¢-per-ton increase tentatively approved by the Interstate Commerce Commission, a hike of 3 pct, with a 40¢ maximum.

Pittsburgh—No. 1 heavy melting steel moved up \$1 per ton this week on the basis of broker buying for delivery to a mill on the fringe of the district. The new price is \$38 to \$39 per ton. No. 2 bundles also rose \$1. Dealers are reluctant

to sell more than nominal tonnages in the apparent belief that prices are due to go up still further. Latest sale of industrial bundles confirmed the existing price of \$42, top. Stainless steel scrap is firm to strong.

Chicago - After two weeks of hesitation, the Chicago market moved up on purchases by several mills. The dealer market held firm despite a low volume movement of No. 2 heavy melting steel and strong broker attempts to prevent a rise in price for the grade. The main upward movement was confined to steelmaking grades, but lesser increases in other scrap grades followed the steelmaking price breakthrough. Speculation buying. based on expectation of low scrap supply and stronger demand in August, continues.

Philadelphia—Very little scrap was moving in or out of dealer yards as the trade closed down for summer vacations. Prices are unchanged. There is a glimmer of hope that some export orders will be waiting when business resumes later this month.

New York — Business is very slow, with little material moving. But prices apparently are at a temporary bottom. Dealers are refusing to accept new orders at lower present prices, hoping for a pickup in the next few weeks.

Detroit—A local mill was in the market for a small quantity of No. 2 bundles at a level just above quoted prices. Automotive cast was a little firmer due to limited broker

buying. Aside from this, the doldrums continue.

Cleveland — The Valley market is \$1 stronger on prime grades as two mills bought medium tonnage of prime grades for \$40. This grade is scarce as much has been cut up for foundry scrap.

St. Louis—The market here continues very firm, with mills buying at unchanged prices for the most part. Shoveling turnings slipped \$1 and stove plate rose \$1.

Birmingham — Although there was no first-of-month buying of openhearth scrap in this district, there was some activity by electric furnace and cast consumers. The largest consumer, who usually establishes the price level, increased its prices for electric furnace grades \$1 to \$2 per ton.

Cincinnati—Southern pipe making foundries are drawing scrap from Cincinnati and as far north as Chicago. Pipemakers are taking advantage of lower scrap prices compared with pig iron, which has not declined. Steel scrap market is still lethargic.

Buffalo—A small sale of No. 2 grades pushed their price up \$1, for the only significant market action. Generally, the market is in a stalemate, with little movement.

Boston—The domestic market is very quiet. The only hopeful note is the possibility of some export activity shortly.

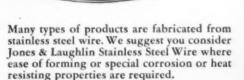
West Coast—The market in San Francisco, Los Angeles and Seattle is slowed to a crawl. Demand is slight, and so is the flow. An important Los Angeles foundry is down and reported to be going out of business.

Hamilton — The Steel Co. of Canada has changed from gross ton to net tons in quoting and purchasing scrap. Dominion Foundries & Steel Ltd., Algoma Steel Corp., and Dominion Steel & Coal still quote gross tons, but may be considering a change. Price levels for July are unchanged from June.

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Pittsburgh

No. 1 hvy. melting	38.00	to	\$39.00
No. 2 hvy. melting	31.00		
No. 1 dealer bundles	37.00	to	38.00
No. 1 factory bundles	41.00	to	42.00
No. 2 bundles	28.00	to	29.00
No. 1 busheling	37.00	to	38.00
Machine shop turn	15.00		
Mixed bor. and ms. turn	15.00		
Shoveling turnings	19.00		
Cast iron borings	19.00		20.00
Low phos. punch'gs plate.	40.00		
Heavy turnings	32.00		
No. 1 RR hvy. melting	40.00		
Scrap rails, random lgth	50.00		
Rails 2 ft and under	53.00		
RR steel wheels	45.00		
RR spring steel	45.00		
RR couplers and knuckles	45.00		
No. 1 machinery cast	48.00		
Cupola cast.	39.00		
Heavy breakable cast			
Stainless	01,00	LU	00.00
18-8 bundles and solids.	175.00	**	195.00
18-8 turnings	00 00		105.00
430 bundles and solids			45.00
410 turnings			40.00

Chicago

-meago				
No. 1 hvy. melting	37.00	to	\$38.00	
No. 2 hvy. melting	34.00	to	35.00	
No. 1 dealer bundles	37.00	to	38.00	
No. 1 factory bundles	44.00	to	45.00	
No. 2 bundles	28.00	to	29.00	
No. 1 busheling	37.00	to	38.00	
Machine shop turn	19.00	to		
Mixed bor, and turn,	21,00	to	22,00	
Shoveling turnings	21.00	to	22.00	
Cast iron borings	21.00	to	22.00	
Low phos. forge crops	46.00	to	47.00	
Low phos. punch'gs plate.	43.00	to	44.00	
Low phos. 3 ft and under	41.00	to	42.00	
No. 1 RR hvy. melting	42.00	to	43.00	
Scrap rails, random lgth	48,00	to	49.00	
Rerolling rails	55.00	to	56.00	
Rails 2 ft and under	52,00	to	53,00	
Locomotive tires cut	49.00	to	50,00	
Cut bolsters & side frames	46.00	to	47.00	
Angles and splice bars	50.00	to	51.00	
RR steel car axles	61.00	to	62.00	
RR couplers and knuckles	46.00	to	47.00	
No. 1 machinery cast	46.00	to	47.00	
Cupola cast	39.00	to	40.00	
Heavy breakable cast	37.00		38.00	
Cast Iron brake shoes	37.00	10	38.00	
Cast iron wheels	34.00		35.00	
Malleable	50.00			
Stove plate	37.00			
Steel car wheels	44.00			
Stainless				
18-8 bundles and solids.	180.00	to	185.00	
18-8 turnings				
430 bundles and solids	100.00	to	105.00	
430 turnings				
		- 40		

Philadelphia Area

No. 1 hvy. melting	33.00	to	\$34.00
No. 2 hvy. melting	29.00		30.00
No. 1 dealer bundles	33.00	to	34.00
No. 2 bundles	23.00	to	24.00
No. 1 busheling	33.00	to	34.00
Machine shop turn	14.00	to	15.00
Mixed bor. short turn	15.00	to	16.00
Cast iron borings	16.00	to	17.00
Shoveling turnings	17.00		18.00
Clean cast. chem. borings	24.00	to	25.00
Low phos. 5 ft and under	38.00	to	39.00
Low phos. 2 ft and under	39.00	to	40.00
Low phos. punch'gs	39.00	to	40.00
Elec. furnace bundles	34.00	to	35.00
Heavy turnings	28.00		29.00
RR steel wheels	42.50	to	43.50
RR spring steel	42.50		43.50
Rails 18 in. and under	55.00		56.00
Cupola cast	37.00		38.00
Heavy breakable cast	39.00		40.00
Cast iron car wheels	41.00		42.00
Malleable	56.00		
Unstripped motor blocks	30.00		31.00
No. 1 machinery cast	47.00	to	48.00

Cincinnati

Brokers buying prices per gro	ss ton	on	cars:
No. 1 hvy. melting\$			
No. 2 hvy. melting			
No. 1 dealer bundles			
No. 2 bundles			
Machine shop turn	11.00	to	12.00
Mixed bor, and turn			
Shoveling turnings	14.00	to	15.00
Cast iron borings	12.00	to	13.00
Low phos. 18 in. and under	39.00	to	40.00
Rails, random length	43.00	to	44.00
Rails, 18 in. and under	53.00	to	54.00
No. 1 cupola cast	40.00	to	41.00
Hvy. breakable cast	32.00	to	33.00
Drop broken cast	45.00	to	46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting\$34.50 to \$	35.50
No. 2 hvy. melting 24,50 to	25.50
No. 1 dealer bundles 34.50 to	35.50
No. 1 factory bundles 39.00 to	40.00
No. 2 bundles 20.50 to	21.50
No. 1 busheling 33.50 to	34.50
Machine shop turn 10.00 to	11.00
Mixed bor, and turn 14.00 to	15.00
Shoveling turnings 14.00 to	15.00
Cast iron borings 14.00 to	15.00
Cut structural & plates, 2 ft	
& under 39.00 to	40.00
Drop forge flashings 34.50 to	35.50
Low phos. punch'gs plate. 35.50 to	36.50
Foundry steel, 2 ft & under 37.00 to	38.00
No. 1 RR hvy. melting 39,00 to	40,00
	54.00
Rails 18 in. and under 54.00 to	55.00
Railroad grate bars 14.00 to	15.00
Steel axle turnings 17.00 to	18.00
Railroad cast 46.00 to	47.00
No. 1 machinery cast 46,00 to	47.00
Stove plate 42.00 to	43.00
Malleable 58.00 to	59.00
Stainless	
18-8 bundles	85.00
18-8 turnings 95.00 to 1	00.00
430 bundles 90.00 to	95.00
430 turnings 35.00 to	40.00

витаю		
No. 1 hvy. melting	26.00 to	\$27.00
No. 2 hvy, melting	23.00 to	24.00
No. 1 busheling	26.00 to	27.00
No. 1 dealer bundles	26,00 to	27.00
No. 2 bundles	21.00 to	22.00
Machine shop turn	10.00 to	11.00
Mixed bor, and turn	11.00 to	12.00
Shoveling turnings	13.00 to	14.00
Cast iron borings	12.00 to	13.00
Low phos. plate	32.00 to	33.00
Structurals and plate.		
2 ft and under	35.00 to	36,00
Scrap rails, random lgth	29.00 to	40.00
Rails 2 ft and under	49.00 to	50.00
RR steel wheels	36.00 to	37.00
RR spring steel	32.00 to	33.00
RR couplers and knuckles	32.00 to	33.00
No. 1 machinery cast	43.00 to	44.00
No. 1 cupola cast	39,00 to	40.00

St. Louis

JI. LOUIS			
No. 1 hvy. melting	33.00	to	\$34.00
No. 2 hvy. melting	30.00		31.00
No. 1 dealer bundles	33.00	to	34.00
No. 2 bundles	25.00	to	26.00
Machine shop turn	15.00	to	16.00
Cast iron borings	19.00	to	20.00
Shoveling turnings	18,00	to	19.00
No. 1 RR hvy. melting	38.00	to	39.00
Rails, random lengths	45.00	to	46.00
Rails, 18 in. and under	50.00	to	51.00
Angles and splice bars	43.00	to	44.00
Std. steel car axles	52.00	to	53.00
RR specialties	41.00	to	42.00
Cupola cast	43.00	to	44.00
Heavy breakable cast	32.00	to	33.00
Cast iron brake shoes	35.00	to	36.00
Stove plate	41.00	to	42.00
Cast iron car wheels	37.00	to	38.00
Rerolling rails	55.00	to	56.00
Unstripped motor blocks	34.00	to	35.00

Birmingham

No. 1 hvy. melting			
No. 2 hvy. melting	25,00	to	
No. 1 dealer bundles	30.00	to	31.00
No. 2 bundles	19.00	to	20.00
No. 1 busheling	30,00	to	31.0
Machine shop turn	20.00	to	21.0
Shoveling turnings	21.00	to	22.0
Cast iron borings	12.00	to	13.0
Electric furnace bundles	36.00	to	37.0
Elec. furnace, 3 ft & under	34.00	to	35.00
Bar crops and plate	40.00	to	41.0
Structural and plate, 2 ft.	39.00	10	40.0
No. 1 RR hvy. melting	32.00	to	33.00
Scrap rails, random lgth	43.00		44.0
Rails, 18 in. and under	46.00		47.0
Angles & splice bars	40.00		41.0
Rerolling rails	53.00		54.0
No. 1 cupola cast	51.00		52.0
Stove plate	51.00		52.0
Charging box cast	22.00		23.0
Cast iron car wheels	35.00		36.0
Unstripped motor blocks	39.00		40.0
Custripped motor blocks	00.00	10	40.0

Youngstown

No. 1 hvy. melting			0	38.00	to	39.00
vo. 2 hvy. melting		 	0	28.00	to	29,00
No. 1 dealer bundle	8			38.00	to	39.00
io. 2 bundles		 		25.00	to	26.00
dachine shop turn.		 		12.50	to	13.50
hoveling turnings		 		17.50	to	18.50
ast iron borings				17.50	to	18.50
ow phos. plate				39,00	to	40,00

New York

	TOTT I WIN	
1	Brokers buying prices per gross ton	on cars:
1	No. 1 hvy. melting\$25.00 t	to \$26.00
7	No. 2 hvy. melting 22.00 t	to 23.00
	No. 2 dealer bundles 14,00 t	to 15.00
		to 8.00
	Mixed bor, and turn 10.00 t	to 11.00
	Shoveling turnings 10.00 t	to 11.00
	Clean cast, chem. borings, 22.00 t	to 23.00
	No. 1 machinery cast 34.00 t	to 35.00
	Mixed yard cast 32.00	to 33.00
	Charging box cast 31.00	to 32.00
	Heavy breakable cast 31.00	to 32.00
	Unstripped motor blocks 22.00	to 23.00
	Stainless	
	18-8 prepared solids155.00	to 160.00
	18-8 turnings 55.00 t	to 60.00
	430 prepared solids 65.00	to 70.00
	430 turnings 20.00	

Detroit

Denon		
Brokers buying prices per gross ton	- 01	cars:
No. 1 hvy, melting\$28,00	10	\$29.00
No. 2 hvy. melting 22.00		
No. 1 dealer bundles 31.00	to	32.00
No. 2 bundles 18.00	to	19.00
No. 1 busheling 28.00	10	29.00
Drop forge flashings 27.00	to	28.00
Machine shop turn, 9.00	to	10,00
Mixed bor, and turn, 10,00	to	11.00
Shoveling turnings 11.00	to	12.00
Cast fron borings 11.00	to	12.00
Low phos. punch'gs plate. 30.00		
No. 1 cupola cast 37.00		
Heavy breakable cast 26.00	to	27.00
Mixed cupola cast 37.00	to	38,00
Automotive cast 38.00	to	39,00
Stainless		
18-8 bundles and solids, 170,00	to	175.00
18-8 turnings 75.00	to	80,00
430 bundles and solids., \$0.00	to	85.00
410 turnings 20,00	to	25.00

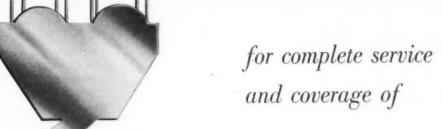
Brokers buying prices per gre	ss ton	en	care:
No. 1 hvy. melting	\$22.00	to !	23.00
No. 2 hvy. melting	17.00	to	18.00
No. 1 dealer bundles	22.00	to	23.00
No. 2 bundles	14.00	to	15.00
No. 1 busheling	22.00	to	23.00
Machine shop turn	5.00	to	6.00
Mixed bor, and short turn.	5.00	to	6.00
Shoveling turnings	7.00	to	8,00
Clean cast, chem, borings	14.00	to	15.00
No. 1 machinery cast	31.00	to	32.00
Mixed cupola cast	26.00	to	27.00
Heavy breakable cast	27.00	to	28.00
Stove plate	26.00	to	27.00
Unstripped motor blocks	22.00	to	23.00

San Francisco

No. 1 hvy, melting	\$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast	45.00
Los Angeles	
No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30,00
No. 1 dealer bundles \$27.00 to	28.00
No. 2 bundles	17.00
Machine shop turn,	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn 1 ft and under	
(foundry)	43.00
No. 1 RR hvy, melting	33.00
No. 1 cupola cast	39,00
Seattle	

Seattle	
No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast	36.00
Mixed yard cast	36.00
Hamilton, Ont.	
No. 1 hvy. melting	\$30.00

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn	15.00
	19.00
Mixed bor, and turn	15.00
Rails, rerolling	39.00
Court comps #45 00 t	0 50 00



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Subsidy Plan Still A 50-50 Bet

Observers believe compromise version of Seaton Plan has fair-to-good chance.

But industry worries that possible House-Senate differences might doom passage at this session.

■ There have been a few new roadblocks thrown in the way of the Domestic Minerals Stabilization Program, dubbed the Seaton Plan.

But most veteran observers say the new obstacles aren't big enough to make a difference. They still believe chances for enactment of a modified Seaton Plan this session are better than 50-50.

How Things Stand — Here's the current situation: A modified version has been approved by the Senate Interior Committee. The level at which the plan will support lead and zinc prices was raised slightly:

	Lead	Zinc
Senate	151/2€	131/26
Seaton	143/46	123/4 €

The maximum subsidy the government would pay was also adjusted by the committee to 3.9¢ per lb for lead, and 2.9¢ per lb for zinc. The original Senate bill had called for payment of maximum of 4¢ per lb for both metals. But the Seaton proposals unofficially had suggested maximum of 3.375¢ per lb for lead, and 2.5¢ per lb for zinc.

House Study—The House Interior Committee, meanwhile, has begun its examination of the situation. Of the number of bills before the group, the one getting the most attention is H. R. 13280, sponsored

by committee chairman Rep. Clair Engle (D., Calif.).

It is about the same as the Senate Committee's version, but adds chromite, beryl, and columbium-tantalum.

Also, Interior Secretary Fred Seaton stressed to the committee that he still strongly favors his original proposals.

Big Worry—Some producers are worrying that the final House version may differ from the Senate's. With the end of the session looming, they question whether the House and Senate could agree on a compromise.

Observers say this is not a factor because the House and Senate are not far apart, and leaders in both chambers do not appear to be firmly committed to their positions. Besides, say observers, House Interior Chairman Engle is not likely to hold out for his amendment in committee since he is on record favoring the Senate version over no bill at all. This may mean he will oppose a change in the support level.

Presidential Veto? — There has been the suggestion the President might veto even a compromise bill if support levels for lead and zinc are higher than his Interior Secretary wants.

Copper

Anaconda's attempt to push the going price for producers' copper up to 26.5¢ per lb found some support just as the trade was judging it a failure.

Phelps Dodge joined Anaconda,

leaving Kennecott as the last of the Big 3 at 25¢ per lb.

Phelps Dodge had no official comment on its move. It came right after the 1.7¢ per lb tariff on copper took effect.

Also, copper buying in general appears to be following the normal seasonal trend and slowing almost to a standstill as fabricators and mills close during July for vacation.

The only immediate reaction to the Phelps Dodge move was a flurry of small, rush orders received by Kennecott, possibly as a hedge.

Custom smelters are quoting 26¢ per lb, and not doing much business.

Lead

The industry is not particularly happy about the defeat of stockpile proposals by the Senate Interior Committee. The gloom showed up in a price cut, down ½ e per lb, to 11e at New York, effective July 1.

The prices for the week: July 1—94.125; July 2—94.25; July 3—94.25; July 4—holiday; July 7—94.125; July 8—94.00.*

Correction: The average price for tin at New York in June was 94.708¢ per lb, not as reported in the July 3 issue.

Primary Prices

(cents per lb)	current price	last price	date o
Aluminum pig	24.00	26.00	4/1/58
Aluminum ingst	26.10	28.10	4/1/58
Copper (E)	25-26.50	25.00	6/16/58
Copper (CS)	26.00	25.50	7/2/58
Copper (L)	25.90	27.00	1/13/58
Lead, St. L.	10 80	11.30	7/1/58
Load, N. Y.	11.00	11.50	7/1/58
Magnesium inget	36.00	34.00	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	84.50	12/6/56
Titanium sponge	185-290	200-250	4/1/58
Zinc, E. St. L.	10.80	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. COP-PER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 149.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt.,frt. allowed) Flat Sheet (Mill Finish and Plate) ("F" temper except 6061-0)

Alloy	.032	.081	.136-	3.250-
1100, 3003	44.6	42.3	41.1	41.7
	52.0	46.9	45.2	44.4
	49.4	45.0	43.2	43.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	45 0-46 8 45 7-47 2 49 0-49 5 58 0-58 6	88.4-62.1 59.3-63.8 70.1-74.8 94.2-97.8

Screw Machine Stock-2011-T-3

Size*	34	36-56	94-1	134-136
Price	61.0	60.5	59.0	56.6

Roofing Sheet, Corrugated

(Per sheet 26" wide hase 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed) Sheet and Plate

Type → Gage	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand, Grade		67.9	60.0	77.9	108.1
AZ31B Spec		93.3	95.7	108.7	171.3
Tread Plate		70.6	71.7		
Tooling Plate	73.0				

Extruded Shapes

factor->	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Inget

NICKEL, MONEL, INCONEL

(Base pr	sces, f.c	b. mill)	
"A"	Nickel	Monel	Incone
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube .	157	129	200
Chot, blocks		87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	48.13		45.36	48.32
Brass, 70/30	42.69	43 . 23	42.63	45.60
Brass, Low	44.90	45.44	44.84	47.71
Brass, R L	45.67	46.21	45.61	48.48
Brass, Naval	47.07		41.38	50.48
Muntz Metal	45.19		41.00	
Bomm. Ba.	46.98	47.52	46.92	49.54
Mang. Bs.	50,81		44.91	
Phos. Bz. 5%	67.17		67.67	

Free Cutting Brass Rod 31.03

TITANIUM

(Freight included in 5000 lbs)

(Freight included in 5000 lbs)
Sheet and strip, commercially pure, \$8.50\$10.10; alloy, \$15.95; Plate, HR, commercially
pure, \$6.00-\$6.75; alloy, \$8.75-\$9.50. Wire,
rolled and/or drawn, commercially pure, \$6.50\$7.00; alloy, \$10.00-\$11.50; Bar, HR or forged,
commercially pure, \$5.25-\$5.50; alloy, \$5.25\$6.35; billets, HR, commercially pure, \$4.10\$4.35; alloy, \$4.10-\$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex... 29.50
Beryllium aluminum 5% Be, Dollar
per lb contained Be... 874.75
Beryllium 97% lump or beads,
f.o.b. Cleveland, Reading \$71.50
Bismuth, ton lots \$2.25
Cadmium, del'd \$1.55
Calcium, 99.9% small lots \$4.55
Calcium, 99.9% small lots \$4.55
Calcium, 99.9% small lots \$4.55
Chromlum, 99.8% metallic basis... \$1.31
Cobalt, 37-99% (per lb) \$2.00 to \$2.07
Germanium, per gm, Lo.b. Miami,
Okla, refined \$39.50 to 50.00
Gold, U. S. Treas, per troy oz... \$35.00
Indium, 99.9% dollars per troy oz... \$35.00
Indium, 99.9% \$11.00 to \$14.00
Magnesium, sticks, 100 to 500 lb... 59.00
Silver ingots (contained nickel \$1.25
Palladium, dollars per troy oz... \$228 to \$231
Nickel oxide sinter at Cooper
Cliff, Ont. contained nickel \$1.25
Palladium, dollars per troy oz... \$62 to \$70
Rhodium \$120.00 to \$125.00
Silver ingots (contained nickel \$1.25
Palladium, per kg... \$43.00
Vanadium \$3.45
Zirconium sponge \$5.00

Remelted Metals

Brass Ingot

(Cen	ts per	16	di	elis	ver	ed.	car	load	8)
85-5-5 in	got								
No. 11	5								27.00
No. 12	0								26.25
No. 12									25.75
80-10-10									
No. 30	5								31.25
No. 31			4.4	* *					29,25
88-10-2 1	ngot								
No. 21	0								38.25
No. 21	5								34.00
No. 24									30.75
Yellow in									
No. 40									. 22.75
Mangane	se bro	nze	3						
No. 42	1				n 10				24.50

Aluminum Ingot

recommend to get
(Cents per lb del'd 30,000 lb and over)
95-5 aluminum-silicon alloys
0.30 copper max24.00-24.25
0.60 copper max23.75-24.00
Piston alloys (No. 122 type) 23.25-24.25
No. 12 alum. (No. 2 grade) 21.00-21.75
108 alloy
195 alloy
13 alloy (0.60 copper max.)23.75-24.00
AXS-679 (1 pet zine)21.25-22.25

(Effective July 7, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade	1-95-97 1/2	%		۰			0			. 22.00-23.50
										.21.00-21.75
Grade	3-90-92%		0		٠	۰	•	۰		.20.00-20.7
Grade	485-90%					۰		۰		.17.00-18.00

SCRAP METALS

Brass Mill Scrap

ahipments												
0.000					_							Turnings
Copper					0		0	0		21		20 1/4
Yellow brass	0		0	0	0	٠	0	0		16	3/6	14 1/2
Red brass				۰		۰	0			18	%	17%
Comm. bronze										19	14	181/2
Mang, bronze									٠	.14	%	14%
Yellow brass	r	0	đ		e	n	d	8		15	3/8	

Customs Smelters Scrap

per									lots,	
oppe	r w	ire						×		2214
oppe	r W	ire	4 6	*	8					2034
oppe	r .				×					181/2
y b	rase					0 8				20 1/2
bear	ing	ma	ite	ri	a	1		×.		191/
	oppe oppe oppe	opper wopper wopper .	opper wire opper wire opper ry brass	opper wire opper wire opper wire opper	to refin	to refine opper wire opper wire opper	opper wire opper wire opper wire opper y brass	opper wire opper wire opper wire opper wire opper wire opper	to refinery) opper wire opper wire opper ry brass	per pound carload lots, to refinery) opper wire opper wire opper y brass bearing material

Ingot Makers Scrap (Cents per pound carload lots, delivered

to regnery)	
No. 1 copper wire	2214
No. 2 copper wire	2034
Light copper	181/2
No. 1 composition	191/2
No. 1 comp. turnings	19
Hvy. yellow brass solids	14
Brass pipe	1434
Radiators	15%
Aluminum	
Mixed old cast 11 -	-1114
Mixed new clips 141/2-	-15
Mixed turnings, dry 121/2-	-13

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 coppe	r wire					-20 1/2
No. 2 coppe	r wire				18	-181/2
Light coppe	r				1.6	$-16\frac{1}{2}$
Auto radiat	ors (u	nswe	ate	1).	12	-121/2
No. 1 comp	osition				16	-16 1/2
No. 1 comp	osition	tur	ning	8	1.5	-15 1/2
Cocks and	faucets				13	-13 1/2
Clean heavy	yellow	bri	188		11	-111/2
Brass pipe					13	-13 1/2
New soft br	ass clip	pping	88 ,		135	<u>6</u> —14
No. 1 brass	rod tu	rning	38 .		11	-111/2

Aluminum

Alum. pistons and struts	5 - 51/2
Aluminum crankcases	9 91/2
1100 (2S) aluminum clippings	1212-13
Old sheet and utensils	9 - 9 1/2
Borings and turnings	6 - 6 1/2
Industrial castings	9 - 91/2
2024 (24S) elippings	10 /2 11
Zinc	

New zinc clippings Old zinc Zinc routings Old die cast scrap

Nickel and Monei Nickel and Monei Pure nickel clippings Clean nickel turnings Nickel anodes Nickel anodes Nickel rod ends New Monel clippings Clean Monel turnings Old sheet Monel Nickel silver clippings, mixed Nickel silver turnings, mixed

Lead

Soft scrar	eac	1		×		×					6	14-	6	
Battery p	lates	(dry)			×	,		*	×		14-		
Batteries,	acid	free		*	*	ĸ		×	٠		1	1/2-	1	34
		**												

Miscellaneous Block tin ...

No. 1 pewter	59 - 60
Auto babbitt	39 -40
Mixer common babbitt	$9\frac{1}{2} - 10$
Solder joints	1314-1334
Siphon tops	42
Small foundry type	101/2-103/4
Monotype	1014-1014
Lino, and stereotype	914-914
Electrotype	814-814
Hand picked type shells	614-634
Lino, and stereo, dross	24-24
Electro dross	134-2

75 -76

-	RON AGE		Italics ide	entify produc	ers listed in	key at end of	table. Base	prices, t.o.b	mill, in cents	per lb., unless	otherwise no	sted. Extra	a apply.		
STEEL		BILLE	TS, BLO SLABS	OMS,	PIL- ING		SHAPES	ALS	STRIP						
P	PRICES	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Stee I	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hat- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled	
	Bethlehem, Pa.			\$114.00 B3		5.325 B3	7.80 B3	\$.325 B3							
	Buffalo, N. Y.	\$77.50 R3, B3	\$96.00 R3, B3	\$114.00 R3, B3	6.225 B3	5.325 B3	7.80 B3	5.325 B3	4.925 R3, B3	7.18 S10	7.325 B3				
	Phila., Pa.									7.70 P15					
	Harrison, N. J.													15.05 C	
	Conshohocken, Pa.		\$101.00 A2	\$121.00 .42					4.975 //2		7.325 A2				
	New Bodford, Mass.									7.60 R6					
LS	Johnstown, Pa.	\$77.50 B3	\$96.00 B3	\$114.00 B3		5.325 B3	7 80 B3							-	
EAST	Boston, Mass.									7.70 T8				15.40 T	
	New Haven, Conn.									7.60 DI					
	Baltimore, Md.									7.15 T8					
1	Phoenixville, Pa.					5.325 P2		5.325 P2						-	
	Sparrows Pt., Md.								4.925 B3		7.325 B3				
	New Britain, Bridgeport, Wallingford, Conn.			\$114.00 N8						7.60 W1,S7					
	Pawtucket, R. I.									7.70 N7				15.40 N	
_	Worcester, Mass.									7.70 A5				15.20 T	
	Alton, III.								5.125 L1						
	Ashland, Ky.								4.925 A7						
	Canton-Massillon, Dover, Ohio Chicago, Ill.	\$77.50 U1,	\$98.50 R3 \$96.00 U1.	\$114.00 R3, T5	6 995 111	5.275 UI.	7.75 U1, Y1	6 975 1/1	4.925 W8,	7.15 G4 7.25 AI, T8		10.45 G4	8.10 W8.	14.85 C	
	Franklin Park, III. Evanston, III.	R3	R3,W8	R3,W8		W8.P13	W8		N4,AI	M8			59,13	S9,G4	
	Cleveland, Ohio									7.15 A5,J3		10.45 A5	8.10 /3		
	Detroit, Mich.			\$114.00 R5					4.925 G3, M2	7.15 M2,D1, D2,G3,P11	7.325 G3	10.60 D2 10.50 G3	8.10 G3	15.05 G	
_	Anderson, Ind.									7.15 G#				1000 PT 1000 - 1000 PT	
WEST	Duluth, Minn.							4							
MIDDLE	Gary, Ind. Harbor, Indiana	\$77.50 UI	\$96.00 UI	\$114.00 UI. YI		5.275 UI. 13	7.75 UI. 13	5.275 /3	4.925 U1, 13, Y1	7.15 Y/	7.325 UI, 13, YI	10.60 Y/	8.10 UI+ YI		
Z	Sterling, III.	\$77.50 N4				5.275 N4			5.825 N4						
	Indianapolis, Ind.									7.30 /3				15.20 /	
	Newport, Ky.												8.10 //9		
	Middletown, Ohio														
	Niles, Warren, Ohio Sharon, Pa.		\$96.00 S1, C10	\$114.00 C10,S1					4.925 R3, S1	7.15 R3,T4 SI	7.325 R3, S1	10.50 SI 10.45 R3	8.10 SI	15.05 S	
	Owenshore, Ky.	\$77.50 G5	\$96.00 G5	\$114.00 G5	2 900 57	5.275 UI.	7.75 UI.	E 995 771	4000 00	715 12 54			9 14 75	15.45.0	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	\$77.50 U1, P6	\$96.00 UI, CII,P6	\$114.00 UI, CII,B7	6.225 UI	J3	1.1501,	5.275 UI	4.925 P6	7.15 /3,84			8.10.59	15.05 S	
	Weirton, Wheeling, Follansbee, W. Va.				6.225W3	\$.275 W3		5.275 W3	4.925 W3	7.15 W3,F3		10.50 W3			
	Youngstown, Ohio	\$77.50 R3	\$96.00 YI, C10	\$114.00 Y/			7.75 Y/			7.15 YI,J3	7.325 UI, YI	10.65 Y/	8.10 UI. YI	15.05 / 10.65 Y	
	Fontana, Cal.	\$88.00 K1	\$105.50 K1	\$135.00 K1		6.075 K1	8.55 K1	6.225 K1	5.675 K1	9.00 KI					
	Geneva Utah		\$96.00 C7			5.275 C7	7.75 C7							-	
	Kansas City, Mo.					5.375 S2	7.85 S2						8.35 S2		
	Los Angeles,		\$105.50 B2	\$134.00 B2		5.975 C7,	8.45 B2		5.675 C7,	9.05 J3 9.20 C/			9.30 B2	17.25 J	
WEST	Torrance, Cal.					B2			82						
W	Minnequa, Colo.					5.575 C6			6.825 C6	9.10 K/					
	Portland, Ore. San Francisco, Nilea, Pittaburg, Cal.		\$105.50 B2			6.025 <i>O2</i> 5.925 <i>B2</i>	8.40 B2		5.675 C7, B2						
	Seattle, Wash.		\$109.50 B2			6.025 B2	8.50 B2		5.925 B2						
-	Atlanta, Ga.					5.475 A8			4.925 A8						
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$77.50 T2	\$96.00 72			5.275 T2, R3,C16	7.75 72		4.925 T2, R3,C16		7.325 T2				
SOU	Houston, Lone Star,		\$101.00 S2	co CO		5.375 S2	7.85 S2			1			8.35 S2		

,	IRON AGE		Italics ide	ntify producers	listed in Key	at end or tab	e. Date price	s, 1.0.0. man, a	- Centro per 10.	, dilles outer a		or an appropri	1
	STEEL				SHE	ETS				WIRE ROD	TINP	LATE†	BLACE
1	PRICES	Hot-rolled /8 ga. & hvyr.	Cold- rulled	Galvanized	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
	Bethlehem, Pa.												
	Buffalo, N. Y.	4.925 B3	6.05 B3				7.275 B3	8.975 83		6.15 W6	† Special co	sated mfg.	
	Clayment, Del.										1.25-lb, coke	hase box	
	Coatesville, Pa.										deduct \$2.20	naking quality 5 to 128 lb. 6 from 1.25 lb.	
	Conshohocken, Pa.	4.975 /12	6.10 /12				7.325 A2				* COKES:	1.50-lb.	
	Harrisburg, Pa.		*****								ELECTRO	0.50-lb. add	
ST	Hartford, Conn.										25¢; 0.75-lb. 1.00-lb. add	add 65¢; \$1.00. Differ-	
EAST	Johnstown, Pa.									6.15 B3	ential 1.00 lb add 65c.	ь./0.25 пь.	
	Fairless, Pa.	4.975 UI	6.10 UI				7.325 UI	9.025 UI			\$10.15 UI	\$8.85 UI	
	New Haven, Conn.												
	Phoenizville, Pa.												
	Sparrows Pt., Md.	4.925 B3	6.05 B3	6.60 B3			7.275 B3	8.975 B3	9.725 B3	6.25 B3	\$10.15 B3	\$8.85 B3	
	Worcester, Mass.						-			6.45 A5			
	Trenton, N. J.												
	Altsa, Ill.									6.35 <i>L1</i>			
	Ashland, Ky	4.925 A7		6.60 A7	6.625 A7								
	Canton-Massillon, Dover, Ohio			6.60 R3, R1									
	Chicago, Joliet, Ill.	4.925 W8, Al					7.275 UI			6.15 A5, R3,W8, N4, K2			
	Sterling, III.									6.25 N4, K2			
	Cleveland, Ohio	4.925 R3,	6.05 R3,		6.625 R3		7.275 R3,	8.975 R3,		6.15 //5			
		J3	J3				J3	J3					
	Detroit, Mich.	4.925 G3, M2	6.05 G3 M2				7.275 G3	8.975 G3					
-	Newport, Ky	4.925 Al	6.05 Al										
LE WEST	Gary, Ind. Harbor, Indiana	4.925 U1, 13,Y1	6.05 UI, 13, YI	6.60 UI, 13	6.625 UI, 13, Y1	7.00 UI	7.27\$ U1, Y1,13	8.97\$ UI, YI		6.15 YI	\$10.05 UI, YI	\$8.75 <i>13</i> , <i>UI</i> , <i>YI</i>	7.50 UI, YI
MIDDLE	Granite City, III.	5.025 G2	6.15 G2	6.70 G2	6.725 G2							\$8.85 G2	7.60 G2
Σ	Kokomo, Ind.			6.70 C9						6.25 C9			
	Manafield, Obio	-	6.05 E2			7.00 E2							
	Middletown, Ohio		6.05 A7	6.60 A7	6.625 A7	7.00 .47							
	Niles, Warren, Ohio Sharon, Pa.	4.925 R3, N3,SI	6.05 R3	6.60 R3	6.625 N3, SI	7.00 N3, SI,R3	7.275 R3	8.975 SI, R3				\$8.75 R3	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 UI, J3.P6	6.05 U1. J3,P6	6.60 UI. J3	6.625 UI		7.275 U1. J3	8.975 U1, J3	9.725 UI	6.15 A5, J3,P6	\$10.05 UI. J3	\$8.75 UI. J3	7.50 UI, J3
	Pertamouth, Ohio	4.925 P7	6.05 P7	-						6.15 P7			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 W3,	6.05 W3,	6.60 W3, W5	ATT	7.00 W3, W5	7.275 W3	8.975 W3			\$10.05 W5,	\$8.75 W5,	7.50 W5
	Youngstown, Ohio	4.925 UI. YI	6.85 Y1	WS	6.625 Y/	W5	7.275 Y1	8.975 Y/		6.15 Y1	H'3	W3	
_	Fontana Cal.	5.675 K1	7.30 KI				8.025 K1	10.275 K1			\$10.00 KI	\$9.50 KI	
	Geneva, Utah	5.025 C7											
	Kansas City, Mo.									6.40 S2			
WEST	Los Angeles, Terrance, Cal.									6.95 B2			
	Minneques, Colo.	E 800 CO	200.07	200.00						6.40 C6	****		
	San Francisco, Niles, Pittsburgh, Cal. Seattle, Wash.	5.625 C7	7.80 C7	7.35 C7						6.95 C7	\$10.80 C7	19.50 C7	
_	Atlanta, Ga.												
SOUTH	Fairfield, Ala. Alabama City, Ala.	4.925 72, R3	6.85 T2, R3	6.60 TZ, R3	6.625 T2					6.15 T2, R3	\$10.15 72	\$8.85 77	
80	Houston, Tax.									6.40 52			

	STEEL											
	PRICES			BA	RS				PLA	TES		WIRE
•	RICES	Carbon† Steel	Reinforc- ing	Cold Finished	Alloy Het- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfre'. Bright
	Bethlehem, Pa. Buffalo, N. Y.	5.425 R3,B3	5.425 R3,B3	7.35 B5	6.475 B3 6.475 B3,R3	8.775 B3 8.775 B3,B5	7.925 B3 7.925 B3	\$.10 B3		7.20 B3		7.65 W6
	Claymont, Del.							5.18 C4		7.28 C4	7.625 C4	
	Conshohocken, Pa.							5.10 L4		7.20 L4	7.625 L4	
	Harrisburg, Pa.							5.10 A2 5.10 P2	6.175 A2 6.275 P2	7.20 A2	7.625 A2	
	Milton, Pa.	5.575 M7	5.575 M7					3.10 72	6.215 P2			
-	Hartiord, Comp.	5.515 M/	2.010 MZ	7.80 R3		9.075 R3	7.925 B3					
EAST	Johnstown, Pa.	5.425 B3	5.425 B3		6.475 B3			5.10 B3		7.20 B3	7.625 B3	7.65 B3
	Fairless, Pa.	5.575 UI	5.575 UI		6.625 U1							
	Newark, N. J.			7.75 W10		8.95 W10				-		
	Camden, N. J. Bridgeport, Conn. Putnam, Conn.			7.75 P10 7.85 W10 7.80 J3	6.55 N8	8.95 P10 8.925 N8						
	Willimantic, Conn.											
	Sparrows Pt., Md.		5.425 B3					\$.10 B3		7.20 B3	7.625 B3	7.78 B3
	Palmer, Wercester, Readville, Mass. Mansfield, Mass.			7.85 B5,C14		9.075 A5,B5						7.95 A5, W6
_	Spring City, Pa.			7.75 K4		8.95 K4						
	Alton, III.	5.625 L1										7.85 L1
	Ashland, Newport, Ky.							5.10 A7,A1		7.20 Al		
	Canton, Massillon, Ohio Chicago, Jeliet,	5.90° R3 5.425 U1,R3,	5.425 UI, R3,	7.30 R3,R2	6.475 R3, T5	8.775 R3,R2, T5 8.775 A5,	7.925 UI, W8	5.10 UI, AI,	4 170 111	9 00 111 11/0	2 445 576 14/6	747.46.6
	Waukegan, III. Harvey, III.	W8,N4,P13	N4,P13	7.30 A5, W10,W8 B5,L2,N9	W8	W10,W8 L2,N8,B5		W8,13	6.175 UI	7.29 UI,W8	7.625 U1,W8	W8,N4, K2,W7
	Cleveland, Ohio Elyria, Ohio	5.425 R3	5.425 R3	7.30 A5,C13 C18		8.775 A5, C13, C18	7.925 R3	\$.20 R3,J3	6.175]3		7.625 R3, J3	7.65 A5, C/3
	Detreit, Mich.	5.425 G3	5.425 G3	7.55 P3 7.50 P8,B5	6.475 R5 G3	8.775 R5 8.975 B5,P3, P8	7.925 G3	\$.10 <i>G</i> 3		7.20 G3	7.625 G3	
31	Duluth, Minn.											7.65 A5
N.E. WEST	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.425 UI, I3, YI	\$.425 UI,13, YI	7.30 R3.J3	6.475 U1,13, Y1	8.775 R3,M4	7.925 UI, YI	\$.10 UI,13, YI	6.175 /3,/3	7.20 UI, YI	7.625 Ut, Y1,13	7.75 M4
MIDDLE	Granite City, III.							5.20 G2				
	Kokomo, Ind		5.525 C9									7.75 C9
	Sterling, III.	5.525 N4	5.525 N4					5.10 N4				7.75 K2
	Niles, Warren, Ohio			7.30 C/O	6.475 C10,S1	8.775 C10	7.925 SI	5.10 R3,S1		7.20 SI	7.625 R3,	
	Sharon, Pa. Owensbore, Ky.	5.425 G5			6.475 G5						SI	
	Pittsburgh, Midland, Danora, Aliquippa, Pa.		\$.425 U1, J3	7.30 A5,B4, R3,J3,C11, W10,S9,C8	6.475 U1, J3, C11, B7	8.775 A5, W10,R3,S9, C11,C8	7.925 U1, J3	\$.10 UI, J3	6.175 UI	7.20 UI, J3, B7	7.625 UI.J3, B7	7.85 A5, J3,P6
	Portsmouth, Ohio			779,57,68								7.65 P7
								5.10 W5				1.03 7 7
	Weirton, Wheeling, Follanshee, W. Va. Youngstown, Ohio	5.425 UI,R3, YI	5.425 UI, R3, YI	7.30 A5, Y1,	6.475 UI, YI	8.775 Y1,F2	7.925 UI, YI	\$.10 U1,R3,		7.20 Y/	7.625 UI, R3, Y1	7.65 Y/
	Emeryville, Cal. Fontana, Cal.	6.175 <i>J5</i> 6.125 <i>K1</i>	6.175 /5 6.125 K/		7.525 K1		8.625 K/	5.90 KI		8.00 K/	8.425 K1	
	Geneva, Utah							5.10 C7			7.625 C7	
	Kansas City, Mo.	5.675 S2	5.675 S2		6.725 S2		8.175 S2					7.90 S2
WEST	Los Angeles, Torrance, Cal.	6.125 C7,B2	6.125 C7,B2	8.75 R3,P14	7.525 B2	18.75 P14	8.625 B2					8.60 B2
W	Minnequa, Cala.	5.875 C6 6.175 O2	5.875 C6					5.95 C6				7.90 C6
	Portland, Ore. San Francisco, Nilea, Pittsburg, Cal	6.175 02 6.125 C7 6.175 B2	6.175 02 6.125 C7 6.175 B2				8.675 B2					8.69 C7.C
	Seattle Wash.	6.175 B2,N6	6.175 B2				8.675 B2	6.00 B2		8.10 B2	8.525 B2	
_	Atlante, Ga.	5.625 A8	5.425 A8									7.65 A8
H	Fairfield, Ala. City,	5.425 T2,R3,	5.425 T2,R3,	7.90 C/6			7.925 T2	5.10 T2,R3			7.625 T2	7.65 T2,R
SOUTH	Birmingham, Ala. Houston, Ft. Worth, Lone Star, Tex.	5.675 S2	C/6 5.675 S2		6.725 S2		8.175 S2	5.20 S2 5.20 L3		7.30 S2	7.725 S2	7.90 S2

STEEL PRICES

Key to Steel Producers

With Principal Offices

- Al Acme Steel Co., Chicago
- Alan Wood Steel Co., Conshobocken, Pa. 42
- 43 Allegheny Ludlum Steel Corn., Pittsburgh
- American Cladmetals Co., Carnegie, Pa. 45 American Steel & Wire Div., Cleveland
- 45 Angel Nail & Chaplet Co., Cleveland
- Armco Steel Corp., Middletown, Ohio A7
- Atlantic Steel Co., Atlanta, Ga. 48
- 49 Acme-Newport Steel Co., Newport, Ky.
- Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- **B2** Bethlehem Pacific Coast Steel Corp., San Francisco
- RI Bethlehem Steel Co., Bethlehem, Pa.
- Blair Strip Steel Co., New Castle, Pa. Bliss & Laughlin, Inc., Harvey, Ill.
- Brook Plant, Wickwire-Spencer Steel Div., 86
- Birdsboro, Pa.
- A. M. Byers, Pittsburgh
- Braeburn Alloy Steel Corp., Braeburn, Pa.
- C1 Calstrip Steel Corp., Los Angeles
- Carpenter Steel Co., Reading, Pa.
- Central Iron & Steel Co., Harrisburg, Pa. **C3**
- Ci Claymont Products Dept., Claymont, Del.
- Colorado Fuel & Iron Corp., Denver Columbia Geneva Steel Div., San Francisco C7
- CI Columbia Steel & Shafting Co., Pittsburgh
- Continental Steel Corp., Kokomo, Ind. C
- C10 Copperweld Steel Co., Pittsburgh, Pa.
- C11 Crucible Steel Co. of America, Pittsburgh
- C13 Cuyahoga Steel & Wire Co., Cleveland C14 Compressed Steel Shafting Co., Readville, Mass.
- C15 G. O. Carlson, Inc., Thorndale, Pa.
- C16 Connors Steel Div., Birmingham C17 Chester Blast Furnace, Inc., Chester, Pa.
- CIS Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- Detroit Steel Corp., Detroit D1 Dearborn Div., Sharon Steel Corp.
- D3 Driver Harris Co., Harrison, N. I.
- Dickson Weatherproof Nail Co., Evanston, Ill.
- Eastern Stainless Steel Corp., Baltimore EI
- E2 Empire Steel Co., Mansfield, O.
- FI Firth Sterling, Inc., McKeesport, Pa.
- Fitzsimons Steel Corp., Youngstown
- Follansbee Steel Corp., Follansbee, W. Va.

- G? Granite City Steel Co., Granite City, Ill.
- Great Lakes Steel Corp., Detroit G3
- Greer Steel Co., Dover, O. 63 Green River Steel Corp., Owenboro, Ky:
- HI Hanna Furnace Corp., Detroit
- 12 Ingersoll Steel Div., Chicago
- 13 Inland Steel Co., Chicago 14 Interlake Iron Corp., Cleveland
- 11 Jackson Iron & Steel Co., Jackson, O.
- Jessop Steel Corp., Washington, Pa.
- Jones & Laughlin Steel Corp., Pittsburgh
- Joslyn Mfg. & Supply Co., Chicago
- Judson Steel Corp., Emeryville, Calif. 15
- KI Kaiser Steel Corp., Fontana, Cal.
- K2 Keystone Steel & Wire Co., Peoria K3 Koppers Co., Granite City, Ill.
- K4 Keystone Drawn Steel Co., Spring City, Pa.
- L1 Laclede Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Strel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- MI Mahoning Valley Steel Co., Niles, O. M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mig. Co., Sharon, Pa.
- M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- M7 Milton Steel Products Div., Milton, Pa.
- M8 Mill Strip Products Co., Evanston, Ill.
- NI National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh N3 Niles Rolling Mill Div., Niles, O.
- N# Northwestern Steel & Wire Co., Sterling, Ill.
- N6 Northwest Steel Rolling Mills, Seattle
- Newman Crosby Steel Co., Pawtucket, R. I.
- NB Carpenter Steel of New England, Inc., Bridgeport, Conn.
- N9 Nelson Steel & Wire Co.
- 01 Oliver Iron & Steel Co., Pittsburgh
- 02 Oregon Steel Mills, Portland
- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Iron & Seel Co., Phoenixville, Pa.
- P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittaburgh Colse & Chemical Co., Pittaburgh
- P5 Pittaburgh Screw & Bolt Co., Pittaburgh P6 Pittsburgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit

- P# Plymouth Steel Co., Detroit
- P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- P11 Production Steel Strip Corp., Detroit
- P13 Phoenix Mfg. Co., Juliet, Ill.
- P14 Pacific Tube Co.
- P15 Philadelphia Steel and Wire Corp.
- RI Reeves Steel & Mig. Co., Dover, O.
- R2 Reliance Div., Eaton Mfg. Co., Massillon, O. RI
- Republic Steel Corp., Cleveland Roebling Sons Co., John A., Trenton, N. J. R4
- J. & L. Steel Co., Stainless Div.
- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome, N. Y.
- SI Sharon Steel Corp., Sharon, Pa. Sheffield Steel Div., Kansas City SZ
- Shenango Furnace Co., Pittsburgh
- S4 Simonds Saw and Steel Co., Fitchburg, Mass.
- S5 Sweet's Steel Co., Williamsport, Pa.
- Standard Forging Corp., Chicago
- Stanley Works, New Britain, Conn \$7
- Sit Superior Drawn Steel Co., Monaca, Pa
- 59 Superior Steel Dlv. of Copperweld Steel Co., Carnegie, Pa.
- \$10 Seneca Steel Service, Buffalo
- S11 Southern Electric Steel Co., Birmingham
- 71 Tonawanda Iron Div., N. Tonawanda, N. Y.
- 72 Tennessee Coal & Iron Div., Fairfield
- 73 Tennessee Products & Chem. Corp., Nashville
- 74 Thomas Strip Div., Warren, O.
- Timken Steel & Tube Div., Canton, O.
- 77 Texas Steel Co., Fort Worth
- 78 Thompson Wire Co., Boston
- 111 United States Steel Corp., Pittaburgh
- U? Universal-Cyclops Steel Corp., Bridgeville, Pa. U3 Ulbrich Stainless Steels, Wallingford, Conn.
- Uf U. S. Pipe & Foundry Co., Birmingham
- W1 Wallingford Steel Co., Wallingford, Cos
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa.
- W5 Wheeling Steel Corp., Wheeling, W. Va. W6 Wickwire Spencer Steel Div., Buffalo
- W7 Wilson Steel & Wire Co., Chicago
- W8 Wisconsin Steel Div., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh W12 Wallace Barnes Steel Div., Bristol, Conn.
- YI Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per net ton.

							BUT	TWELD										SEAR	MLESS			
	34	ła.	%	lm.	1	la.	13	(la.	15	ś ln.	2	ln.	23-5	-3 in.	1	in.	23	ý lu.	3	la.	334	-4 la.
STANDARD T. & C.	Blk.	Gal.	Bik.	Gal.	Bik.	Gal	Bik.	Gal.	Bik.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal	Blk.	Gal.	Bik.	Gal.	Bik.	Gel.
Sparrows Pt. B3 Youngstown R3	3.25 5.25 +8.25	+10.0	6.25 8.25 +5.25	+6.0	11.75	+1.50		+0.75	14.75		15.25		14.75	+1.50 0.50 +13.00				4515151		******		
Pittsburgh /3 Alten, III. L1 Sharen M3	5.25 3.25 5.25	+10.0 +12.0 +10.0	8.25 6.25 8.25	+6.0 +8.0 +6.0	11.75 9.79 11.75	+1.50 +3.50 +1.50	14.25 12.25 14.25	+0.75 +2.75 +0.75	14.75 12.75 14.75	0.25 +1.75 0.25	15.25 13.25 15.25	0.75 +1.25 0.75	16.75 14.75 16.75	0.50 +1.50 0.50	*9.25	+24.25	5 *2.75	+19.50	0 *0.25	+17.0	1.25	+15.50
Fairless N2. Pittsburgh N1. Wheeling W5. Wheeling W4.	5.25 5.25	+12.0 +10.0 +10.0 +10.0	8.25 8.25	+6.0		+1.50 +1.50	14.25	+0.75	14.75	0.25 0.25	15.25 15.25	0.75	14.75 16.75 16.75 16.75	9,50	*9.25					+17.0		
Youngstown Y/ Indiana Harbor Y/ Loralo N2	\$.25 4.25	+10.0 +11.0 +10.0	8.25 7.25	+6.6 +7.8	11.75	+1.50 +2.50	14.25	+0.75	14.75	0.25 +0.75	15.25 14.25	+0.25	16.75 15.75 16.75	0.50 +1.60 0.50	*9.25	+24.2	5 °2.75	+19.50	*0.25 *0.25	+17.6	1.25	+15.8 +15.8
PLAIN ENDS Seerrows Pt. B3	7.75	+6.0	11.75	+2.0	14.75																	
Youngstown R3 Pairings N2 Pagings K1	9.75 7.75 +3.75	+4.0	13.75	fist	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	16.75 18.75 16.75 5.25	1.50 3.50 1.50								
Pittsburgh /3 Alton, Ill. L1 Sharon M3	9.75 7.75 9.75	+4.0 +6.0 +4.0	13.75 11.75 13.75	+2.0 list	16.75 14.75 16.75	4.50 2.50 4.50	17.25 15.25 17.25	3.25 1.25 3.25	17.79 15.79 17.79	4.25 2.25 4.25	18.25	4.75	18.75 16.75 18.75	3.54						+13.54		
Wheeling W5 Wheeling W5	9.75 9.75 9.75	+4.0	13.75 13.75	list list	16.75 16.75 16.75	4.50	17.25 17.25 17.25	3.25	17.75	4.25 4.25 4.25	18.25 18.25 18.25	4.75	18.75 18.75 18.75	3.54	*7.73	+21.7	5 *0.25	+16.0	2.25	+13.50	7.25	+8.5
Toungstown YI Indiana Harbor YI Lorain N2	9.75 8.75 9.75	+5.0	12.75	+1.0	16.75 15.75 16.75	3.50	16.25	2.25	16.75	3.25		3.75	18.75 17.75 18.75	2.54								+8.54

, Threads only, buttweld and seamless 2½ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.

Galvaniand discounts hased on nine price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in nine, discounts vary as follows: ½, ½ and 1-in., 2 pt.; 1½, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., a.g., nine price in range over 7¢ to 9¢ would increase discounts on 2½ and 3-in. pipe by 2 points; time price in range over 7¢ to 9¢ would increase discounts.

East St. Louis sine price now 10¢ per lb.

METAL DOWNERS

METAL POWDERS
Per pound, f.o.b. shipping point, in ton
lots for minus 100 mesh
Swedish sponge iron, del. East of
Miss. River, ocean bags, 23,000
ib. and over
Jersey, west of Miss. River 9.5¢
Domestic sponge iron, 98+% Fe,
23.000 lb and over del'd East
of Miss. River 10.5¢
F.O.B. Riverton, New Jersey, West
of Miss. River 9.5¢ Canadian sponge iron, del'd in
Canadian sponge iron, del'd in
East, carloads
mesh FOR Factor Do in 100 lb
bags
bags
Easton, Pa., in 100 lb. bags. Freight allowed east of Miss. River10.5¢
allowed east of Miss. River10.5¢
Atomized iron powder, 98% + Fe. Cutting
Atomized iron powder, 98% + Fe, Cutting and scarfing grade, F.O.B. Easton, Pa
Electrolytic iron annealed
imported 99.5+% Fe 27.5¢
Electrolytic iron, annealed, imported 99.5 + % Fe 27.5¢ domestic 99.5 + % Fe 36.5¢
minus 325 mesh, 99+% Fe 57.0¢
Electrolytic from meiting
stock, 99.84% pure 27.0¢ Carbonyl iron size 3 to 20
micron, 98%, 99.8+% Fe88.0¢ to \$2.85
Aluminum, freight allowed . 38.00¢
Aluminum, freight allowed. 38.00¢ Brass, 10 ton lots
Copper, reduced
Copper, reduced40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd \$5.00
Lead, f.o.b. Hammond, Ind 196
Manganese f.o.b. Extron. Pa. 46.0¢
Molybdenum. 99% \$3 60 to \$3 95
Nickel, chemically precipitated \$1.05
Nickel, annealed \$1.06
Nickel, spherical, unannealed #80 \$1.13
#80 \$1.13 Silicon 43.50¢
Solder powder 13¢ plus met value
Solder powder 13¢ plus met. value Stainless steel, 302 \$1.02 Stainless steel, 316 \$1.30
Stainless steel 316 \$1.30
Tin
Tungsten, 99% (65 mesh) \$3.15 (nominal)
Zinc, 5000 lb & over17.5¢ to 30.7¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill) Pct. Discounts

Machine and Carriage Bolts	Full Con- tainer Price	30 Con- tainers	20,000 Lb.	40,000 Lb.
1/2" and smaller z 6" and shorter	49	54	56	57
56" thru 1" x longer than 6"	35	40	43	45
Holled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	4434	47	4834
Plow holts, 1/2" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

(And 25 per for broken case quantities)
Nuts, Hex, HP reg. & hvy. Full case or Keg price
$\frac{34}{9}$ in. or smaller 60 $\frac{14}{9}$ in. to 1 in. inclusive 55 $\frac{14}{9}$ 11 in. to 1 $\frac{1}{9}$ in. to 1 $\frac{1}{9}$ in. inclusive 58 $\frac{1}{9}$ 1 $\frac{1}{9}$ in. and larger 53 $\frac{1}{9}$
C. P. Hex, reg. & hvy.
¾ in. and smaller 60 ½ ½ in. to 1 ½ in. inclusive 55 ½ 1 ½ in. and larger 53 ½
Hot Galv. Hex Nuts (All Types)
% in. and smaller 46 %
Semi-finished Hex Nuts
5% in. or smaller
Finished % in. and smaller 63
Rivets
Base per 100 lb
½ in. and larger

Cap	Screws	Discount	(Packages)
	Full	Finished H. C.	Heat Treat
New	std. hex he	ad, pack-	

aged		
%" diam. and smaller x 6" and shorter	40	26
%", %", and 1" diam. x	22	3
%" diam, and smaller x longer than 6" %4", %", and 1" diam. x	8	+13
longer than 6"	F	+32 -1018 Steel all-Finished
	C	artons Bull

Machine Screws & Stove Bolts

		Disco	unt
Plain Finis Cartons Bulk	h Quantity	Mach. Screws	Stove Bolt 60
To ¼" diam. incl.	25,000-and over	60	
5/16 to ½" diam.	15,000-200,000	60	

Machine Screws & Stove Bolt Nuts

		Dia	scount
In Cartons	Quantity	Hex 16	Squar 19
In Bulk	Quantity.		
diam. & smaller	25,000 and over	14	16

ELECTROPLATING SUPPLIES

Anodes
(Cents per lb, frt allowed in quantity)
Copper
Rolled elliptical, 18 in. or longer,
5000 lb lots 40.00
Electrodeposited
Brass, 80-20, ball anodes, 2000 lb
or more 44.00
Zinc, ball anodes, 2000 lb lots 16.00
(for elliptical add 1¢ per lb)
Nickel, 99 pct plus, rolled carbon,
5000 lb
(Rolled depolarized add 3¢ per lb)
Cadmium 1.55
Tin, ball anodes \$1.13 per lb (approx.).
Chemicals
(Cents per lb, 1.o.b, shipping point)
Copper cyanide, 100 lb drum 68.70
Copper sulphate, 100 lb bags, per
cwt 22.15
Nickel salts, single, 100 lb bags 40.50
named passed condition and passed and account.

Copper sulphate, 100 lb bags, per	
cwt.	22.15
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed,	
300 lb	48.50
Sodium cyanide, domestic, f.o.b.	
N. Y., 200 lb drums	24.05
(Philadelphia price 24.50)	
Zinc cyanide, 100 ib	60.75
Potassium cyanide, 100 lb drum	
N. Y	48.00
Chromic acid, flake type, 10,000 lb	
or more	31.00
OF WEGIE	-2.00

CAST IRON WATER PIPE INDEX

-Mai				•		*		•	*	•	••	-	•	•	•	•	-			_	-	
Birmin	gh	ATO.				0					0				0		0	۰		1	25.8	ļ
New Y	ork													0				0		1	38.7	
Chicag	0 .																0	0	0	- 1	40.5	þ
San Fr	an	clac	30	-)	L	A	1.		0	0			 0	0			0	0	0	1	48.6	

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

WARE-								Metro	politan l	Price, del	lars per	100 lb.	
HOUSES	Sheets			Strip	Plates	Shapes	Ba	irs	Alloy Bars				
Cities City Delivery t	Hot.Rolled (18 ga. & bvr.)	Cold-Rolled (15 gage)	Calvanized (10 gage) ??	Hot-Rolled		Structura	Hot-Rolled (merchant)	Cold- Finished	Hot-RoBed 4615 As rolled	Hot-Rolled 4348 Annealed	Cold-Draws 4813 As relied	Cold-Draws 4140 Annealed	
Atlanta	8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68				161546	
Baltimere \$.10	8.10	9.00	9.78	8.80	8,76	8.60	8.75	12.43	16.28	15.28	19,83	19.08	
Birmingham	8.18	9.45	10.46	8.23	8.56	8.64	8.60	10.56*					
Boston 10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.28*	16.38	15.38	19.93	19.18	
Buffalo	8.40	9.15	11.22	8,65	9.05	9.05	8.95	11.15*	16.34	15,15	19.01	18.95	
Chicago	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60	
Cincinnati 15	8.49	9.65	10,25	8.69	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91	
Cleveland15	8.33	9.60	10.35	8.48	8.94	9.16	8.84	11.95*	15.89	14.89	19.29	18.69	
Denver20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84	
Detroit15	8.58	9.85	10.60	8.73	9.86	9.33	9.05	9.30	15,46	15,86	18.81	18.86	
Houston	7.10	5.40		7.25	7.70	7.25	7.20	11.10	16.20	15.25	19.65	18.95	
Kansas City20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27	
Los Angeles	8.25	10.30	12.10	8.90	8.85	8.70	8.75	12.10*	17.05	16.10	21.05	20.35	
Memphis 15	8.55	9.80	1311111	8.60	8.93	9.01	8.97	12 11*					
Milwaukee 15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.93	14.93	19.48	18.73	
New York 10	8.97	10.23	10.66	9.41	9.53	9,45	9.67	13.31*	16.19	15.19	19.74	18.99	
Norfalk20	8.20	*****		8.90	8.65	9.20	8.90	10.70					
Philadelphia10	8.10	9.00	10.02	8.79	8.87	8.60	8.75	11.61*	16.11	15.11	19.66	18.91	
Pittsburgh15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95*	15.80	14.80	19.35	18.60	
Portland	10.001	11.752	13.302	11.954	11.508	11.106	9.857	16.00	18.50	17.45	20.75	20.25	
San Francisco 10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35	
Seattle	9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15	
Spokane15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20		17.35	21.55	21.05	
St. Louis 15	8.60	9.94	10.61	8.74	9.08	9.25	9.12	9.56	16.16	15.16	19.71	18.96	
St. Paul	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81		15, 41		19.21	

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb, All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage. †*10/6 sinc. 1 Deduct for country delivery. **C1018—1 in. rounds. **10 ga. x 36" x 120"; **26 ga. x 36" x 96"; **1/6" x 1" in lots of 1000 to 9999; **aheared plate 3/4" x 84" in lots of 1000 to 9999; **aheared plate 3/4" x 84" in lots of 1000 to 9999.

TOOL STEEL

	. mill					
W	Cr	V	Mo	Co	per lb	SAE
18	4	1	Grande	-	\$1.795	T-1
18	4	1	_	5	2.50	T-4
18	4	2	-	-	1.96	T-2
1.5	4	1.5	8	-	1.155	M-1
6	4	3	6	-	1.545	M-3
6	4	2	5	-	1.30	M-2
High	-carbo	n chi	romiu	m	.925 1	D-3, D-5
		ned m			.475	0-2
		rbon			.36	W-1
Extra	a car	bon .			.36	W-1
Regu	lar ce	rbon			.305	W-1
W	rehou	ise pr	ices i	on at	nd east	of Mis-
						Vest of
		. 6e h				

C	LAD STE	L	Base pri	ces, cent	per lb f.o.b					
		Plate (Plate (A3, J2, L4, C4)							
_	Cladding	10 pct	15 pct	20 pct	20 pct					
	302				37.50					
	304	37.95	42.25	46.70	40.00					
2	316	44.40	49.58	54.50	58.75					
. Ty	321	40.05	44.60	49.30	47.25					
Stainless Type	347	42.40	47.55	52.80	57.00					
3	405	29.85	33.35	36.85	*****					
	410	29.55	33.10	36.70	****					
	430	29.80	33.55	37.25						

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS. TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bers	Track Spikes	Screw Spilles	Tie Plates	Track Bolts Universited
Bessemer U1	5.525	6.50	6.975				
Cleveland R3							
So. Chicago R3		0.00		9.75		10000	
Engley T2	\$.525	6.50					
Fairfield 72		6.50		9.75		6.60	
Gary Ul	5.525			****		6.60	
Huntington C/6		6.50					
Ind. Harbor 13.	5, 525		6.975	9.75		6,68	
Ind Harbor Y/				9.75			
Johnstown B3 Joliet U!		6.50				1	
Joliet U!			6.975				
Kansas City S2.				9.75		1	14.75
Lackawanna B3	5,525	6.50	6.975			6.60	
Lebanon B3			6.975		14.50		14.75
Minnegua C6						6,60	14.75
Pittsburgh P5.							14.75
Pittsburgh /3				9.75			
Seattle B2				10.25		6.75	15.75
Steelton Bi	5.525		6.975			6.60	
Struthers Y1			1000	9.75		1000	
Torrance C7						6.75	
Williamsport SS		6,50					
Youngstown R3				9.75			

COKE

Furnace, beehive (f.o.b.) Net-Ton Connellsville, Pa \$15.00 to \$15.75
Foundry, beehive (f.o.b.) \$17.50 to \$19.00
Foundry oven coke
Buffalo, del'd\$31.75
Detroit, f.o.b,
New England, del'd 31.55
Kearney, N. J., f.o.b 29.75
Philadelphia, f.o.b 29.50
Swedeland, Pa., f.o.b 29.50
Painesville, Ohio, f.o.b 30.50
Erie, Pa., f.o.b 30.50
Cleveland, del'd 32.6
Charlement dall'd
Cincinnati, del'd 31.8
St. Paul, f.o.b 29.71
St. Louis, f.o.b 31.50
Birmingham, f.o.b 28.85
Milwaukee, f.o.b 30.50
Neville, Is., Pa 29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, deliver	
lower Lake ports. Prices for 1958 seaso Freight changes for seller's accou	78 E.
Openhearth lump \$12.	
Old range, bessemer 11.	
Old range, nonbessemer 11.	
Mesabi, bessemer	
Mesabi, nonbessemer 11.	
High phosphorus 11	

ELECTRICAL SHEETS

22-Gage	Hot-Rolled	Cut Longth)					
Cents Per Lb	(Cut Lengths)*	Semi- Processed	Fully Processed				
Field		9.625	22122				
Armature	11.10	10.85	11.35				
Elect. Special Motor	11.80	12.10	12.00				
Muter	12.90	12.65	13.15				
Dynamo	13.95	13.70	14.29				
Trans. 72	15.00	14.75	15.25				
Trans. 65	15.55	Grain (Oriented				
Trans. 58	16.05	Trans. 66					
Trans. 52	17.10	Trans. 80 Trans. 73					

Producing points: Beech Bottom (W^j) ; Brackenridge (A3); Granite City (G2) S2 a ton higher; Indiana Harber (B3); Mansfold (E2); Newport, Ky. (A9); Niles, O. (N3); Vandergrift (UI); Warren, O. (R3); Zanesville. Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

(GRAPHITE	3		CARBON'	
Diam. (In.)	Length (In.)	Price	Diam. (ln.)	Length (In.)	Price
24 20 18 14 12 10 10 7 6 4 3	84 72 72 72 72 72 68 48 60 40 40 39 24	26.00 25.25 25.75 25.75 26.25 28.90 28.50 28.25 31.50 35.00 37.00 39.25 60.75	40 35 30 24 20 17 14 12 10 8	100,110 110 110 72 to 84 90 72 72 72 60 60 60	10.70 16.70 10.85 11.25 11.00 11.40 11.85 12.95 13.00 13.30

· Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads 1	er 1000
First quality, Ill., Ky., Md., Mo., Ol	hio, Pa.
(except Salina, Pa., add \$5.00)	\$135.00
Sec. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$2.00)	21.50

Silica Brick

0.0
0.0
90
00
0.0
00
50
50
00
50
50
00
00

Chrome Brick		Per net ton
Standard cher	mically bon	nded, Balt.\$105.00
iner, Calif.	*******	115.00
Burned, Balt.	*******	99.00

Magnesite Brick

Grain	Maa	nesite	8+	84	to	14	_	in	CP1	ro	in	
		bonded,										

Domestic,	f.o.b.												\$	7	3.	01	
Luning, in bulk			*		*	ě		*	*					4			
in eack	Q									5	32.	-634	an .	- 5%	Α.		

Dead	Burn	ed D	olo	m	İŧ	6					1	P	61	P	net	ton
F.o.b.																
	W.															6.75
Mid	west						6 X	*	*	*	. ,			*		7.00
Mis	souri	Vall	ey	* *	×				×	*					1	5.00

(Effective July 7, 1958)

MERCHANT WIRE PRODUCTS

	Standard Q Coated Nails	Woven Wire Fames	"T" Fence Posts	Single Loop Bale Ties	Galv, Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galr.
F.a.b. Mill	Cel	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City R3	173	187			193		9.20
Aliquippa /3000.	173	190			190		9.325
Aliquippa 13000	175	192			198		9.425
Bartonville K2**.	175	192	178	214	198		9.425**
Buffalo W6						8.65	8.95°
Chicago N4***	173	190	172	212	196	8.65	9.325
Cleveland A6							
Cleveland A5							
Crawf'dav. M4 **	175	192			198		9.425
Donora, Pa. A5	173	187			193		9.20
Duluth A5	173	187		212	193	8.65	9.20
Fairfield, Ala. T2	173	187		212	193	8,65	9.20
Galveston D4	9.101						
Houston S2	178	192		217	198		9.45
Jacksonville M4	184-1			219	203		9.675
Johnstown B3**.		190	172		196**	8.65	9.32500
Joliet, Ill. 45	173	187		212	193	8.65	9.20
Kokomo C9"	175	189	100	214	195*	8.75	9.38°
L. Angeles B2***						9.60	10.275
Kansas City S2".	178	192		217	198*	8.90	9.45°
Minnegua C6+	178	192			198†	8.90	9.451
Monessen P6					193	8.65	9.20
Pal mer, Mass. W6						8.95	9.50°
Pittsburg, Cal. C7	102				213	9.60	10.15
Rankin, Pa. 45.					193		9.20
So. Chicago R3.		187			193		9.20
S. San Fran. C6†		101					10.151
Sparrows Pt. B3**	175			214	198		9.425
Sterling III. N4" "	175	192	1 22	214	198		
Struthers, O. Y/°	113	126	116	44	100	8.65	9.30
Worcester A5	179					8 95	9.50

Zinc less than .10¢.
11-12¢ zinc.
10¢ zinc.
† Plus zinc extras.
† Wholesalers only.

C-R SPRING STEEL

		CARB	ON CO	NTEN	Г
Cents Per Lb F.o.b. Mill		0.41-	0.61- 0.80	0.81- 1.05	1.06-
Baltimore, Md. 78	9.50	10.70	12,90	15.90	18.85
Bristol, Conn. W12		10.78	12,90	16.10	19.30
Beston 78			12.90	15.90	18.85
Buffalo, N. Y. R7	. 8.95	10.48	12.60	15,60	18.55
Carnegie, Pa. Sy		10.40	12.60	15,60	18.55
Cleveland A5		10.40	12.60	15.60	18.55
Dearborn S1		10.50	12.70		
Detroit D1	9.05	10.58	12.70	15.70	
Detroit D2	9.05	10.50	12.70		
Dover, O. G4	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M8	9.05	10.40	12.60		
Franklin Park, Ill. 78	9.05	10.40	12.€0	15.00	18.55
Harrison, N. J. Cll				16.10	19.30
Indianapolis 13		10.55	12.60	15.60	18.55
Los Angeles Cl			14.80	17.80	
New Britain, Conn. S7			12.90	15.90	18.85
New Castle, Pa. B4			12.60	15.60	
New Haven, Conn. D.			12.90	15.90	
Pawtucket, R. I. N7			12.90	15.90	18.85
Riverdale, Ill. Al			12.60	15.60	18.55
Sharon, Pa. Sl			12.80	15.60	18.55
Trenton, R4			12.90	16.10	19.30
Wallingford W1			12.90		18.55
Warren, Ohio T4			12.60		18.75
Worcester, Mass. 45.			12.90	15.90	18.85
Youngalown 13	8.95	5 10, 46	12,60	15.40	18,55

BOILER TUBES

\$ per 100 ft. carload lots,	Si	ine	Sean	Elec. Weld	
cut 10 to 24 ft. F.o.b. Mill	OD- in.	B.W. Ga.	H.R.	C.D.	H.R.
Babcnek & Wilcox .	2 236 3 336 4	13 12 12 11 10	36.34 48.94 56.51 65.97 87.61	57.31 66.18	35. 22 47. 40 54. 70 63. 90 85. 50
National Yube	2 21/2 3 33/4 4	13 12 12 11 10	\$6.51 65.97	57.31 66.18	35.2 47.4 54.7 63.9 85.5
Pittsburgh Steel	23/2 33/2 4	13 12 12 11 10	36.34 48.94 56.51 65.97	57.31 66.18	******

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	
Birmingham R3.	62.00	62.50°			
Birmingham W9	62.00	62.50°	66.50		
Birmingham U4.	62.00	62.50°	66.50		
Buffalo R3	66.00	66.50	67.00	67.50	
Buffalo H1	66.00	66.50	67.00	67.50	
Buffalo W6	66.00	66.50	67.00	67.50	
Chester P2	66.50	67.00	67.50		
Chicago 14	66.00	66.50	66.50	67 00	
Cleveland A5	66.00	66.50	66.50	67.00	71.00
Cleveland R3	66.00	66.50	66.50	67.00	
Duiuth 14	66.00	66.50	66.50	67.00	71.00
Erie /4	66.00	66.50	66.50	67.00	71.00
Everett M6	67.50	68.00	68.50		
Fontana KI	75.00	75.50			
Geneva, Utah C7	66,80	66.50			
Granite City G2.	67.90	68.40	68.90		
Hubbard Y/			66.50		
Ironton, Utah C7	66,00	66.50	00.00		
Midland C//	66.00				
Minnequa C6	68 00	68.50	69.00		
Monessen P6	66.00	00.00	00.00		
Neville Is. P4	66.00	66.50	66,50	67.00	71.00
N. Tonawanda T/	00.00	66 50	67.00	67.50	
Sharpsville S3	66,00	00.00	66.50	67.88	
So Chicago R3	66.00	66,50	66.50	67.00	
So. Chicago W8.	66.00	00.50	66.50	67.00	
Swedeland A2	68.80	68,50	69.80	69.50	
Toledo 14	66.00	66.50	66.50	67.00	
Troy, N. Y. R3	68.00	68.50	69.00	69.50	74.00
Youngstown Y/	00.00	90.30	66.58	67.00	14.00

DIFFERENTIALS: Add, 75c per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct sucept leav phos., 1.75 to 2.06 pct on fer each 0.25 pct manganese or portion thereof wer 1 pct, 52 per ton fer 0.50 to 0.75 pct nickel, 3.16 or each additional 0.25 pct nickel. Add 31.00 for 0.31-0.69 pct phos.

Add \$1.00 (or 0.31-0.69 pct phos. Silvery Iron: Badian (6 pct), H1, \$79.25; Jackson J1, 14 (Globo Div.), \$78.00; Ningara Falis 115.01-15.50), \$101.00; Keskuk (14.01-14.50), \$103.50; (15.51-16.00), \$10.00; Add \$1.00 per ton for each 0.50 pct silicen over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 6.50 pct upon portion over 1.00 pct. Beassemer silvery pig iron (under .10 pct phos.); \$64.00 Add \$1.20 for more fine pct phos.); \$64.00 Add \$1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

Product	201	202	301	382	383	304	316	321	347	403	410	416	438
Ingots, reroll.	22.00	23.75	23.25	25.25	-	27.00	39.75	32.25	37.00	_	16.75	-	17.00
Slaba, billets	27.00	27.80	28.00	31.50	32.00	33.25	49.50	40.00	46.50	***	21.50	-	21.75
Billets, forging	-	36.50	37.25	38.00	41.80	40.50	62.25	47.00	\$5.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	45.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	49.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	-	55.00	80.75	65.50	79.25	48.25	40.25	-	40.75
Strip, hot-relled	36.00	39.00	37.25	40.50	-	44.25	69.25	53.50	63.50	-	31.00	-	32.00
itrip, cold-rolled	45.00	49.25	47.50	52.00		55.00	80.75	65.50	79.25	48.25	40.25	-	46.75
Wire CF; Rod HR	40.00	48.75	42.80	42.75	45.50	45.25	69.25	52.50- 82.75	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., Cll; Brackenridge, Pa., 43; Butler, Pa., 47; Vandergrift, Pa., Ul; Washington, Pa., W2, J2. Baltimore, El; Middletown, O., 47; Massillon, O., 83; Gary, Ul; Bridgeville, Pa., Ul; New Castle, Ind., 12; Detroit, M2

Strip; Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3, Bridgeville, Pa., U2; Dettoit, M2; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, J5; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion catras); W1 (25¢ per lb higher); New Bedford, Mass., R6; Gary, U1 (25¢ per lb higher).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1 Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5, R3; Ft. Wayne, I4; Detroit, R5; Gary, U1; Owenboro, Ky., G5; Bridgeport, Conn., N8.

Wite: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., 12; Middletown; A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Midland, Pa., CII; Baltimore, AI; Washington, Pa., J2; McKeesport, FI; Massillon, Canton, O., R5; Watervliet, A3; Pittsburgh, Chicago, UI: Syracuse, CII; Detroit, R5; Munhall, Pa., S. Chicago, UI; Owensboro, Ky., G5; Bridgeport, Conn., N6.

(Effective July 7, 1958)







Four, Fixe, Six, Eight Spindles . Work and Tool kotating Type GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.



Offices: Los Angeles . Chicago . Cleveland . Philadelphia . Birmingham

FERROALLOY PRICES

Ferrochrome	Spiegeleisen	Alsifer, 20% Al. 40% Si, 40% Fe,
Cents per lb contained Cr, lump, bulk, carloads, del'd, 67-71% Cr, 30-1.00%	Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.	f.o.b. Suspension Bridge, N. Y., per lb. Carloads, bulk 10.356
mor Ci	Manganese Silicon 16 to 19% 3% max \$100.50 19 to 21% 3% max 102.50	Ton lots
0.10% C 38.50 1.50% C 37.50 0.20% C 38.25 2.00% C 37.25	19 to 21% 3% max 102.50 21 to 23% 3% max 105.00	f.o.b. Langeloth, Pa., per pound contained Mo
0.02% C 41.00	Manganese Metal	Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound con-
Si 27.50 0.025% C (Simplex) 36.75 0.10% C, 52-57% Cr, 2.00% max Si. 37.50 7-8½% max C, 50-55% Cr, 3-6%	2 in. x down, cents per pound of metal delivered. 95.50% min. Mn. 0.2% max. C. 1% max.	tained Cb. Ton lots
7-8½% max C, 50-55% Cr, 3-6% max Si	95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe. Carload, packed	Ferro-tantalum-columbium, 20%
S1 20.00	Ton lots 47.25	Ta, 40% Cb, 4.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta
High Nitrogen Ferrochrome Low-carbon type 0.75% N. Add 5¢ per	F.o.b. Knoxville, Tenn., freight allowed	Ferromolybdenum, 55-75%, 200- lb containers, f.o.b. Langeloth,
Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.	east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound. Carloads	Pa., per pound contained Mo., \$1.68 Ferrophosphorus, electric, 23-
Chromium Metal	250 to 1999 lb	26%, car lots, f.o.b. Siglo, Mt.
Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.	Premium for Hydrogen - removed metal 0.75	per gross ton\$120.00 10 tons to less carload\$131.00
0.10% max. C	Medium Carbon Ferromanganese	Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots,
9 to 11% C, 88-91% Cr. 0.75% Fe 1.40 Electrolytic Chromium Metal	Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn	O., freight allowed, ton lots, per lb contained Ti \$1.35
Per lb of metal 2" x D plate (\%" thick) delivered packed, 99.80% min. Cr.	Low-Carb Ferromanganese	Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara
(Metallic Base) Fe 0.20 max. Carloads \$1.29	Cents per pound Mn contained, lump size, del'd Mn 85-90%.	0.10% C max, f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti\$1.50
Ton lots	Carloads Ton Less 0.07% max. C, 0.06% (Bulk) P, 90% Mn 37.15 39.95 41.15	Less ton lots
Cr 34-41%, SI 42-45%, C 0.05% max.)	0.07% max. C 35.10 37.90 39.10 0.10% max. C 34.35 37.15 38.35	Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton
Carloads, delivered, lump, 3-in. x down, packed. Price is sum of contained Cr and con-	0.15% max. C 33.60 36.40 37.60 0.30% max. C 32.10 34.90 36.10 0.50% max. C 31.60 34.40 35.60	Ferrotungsten, ¼ x down packed, per pounds contained
tained Si. Carloads, bulk 27.50 14.20	0.75% max. C, 80.85% Mn, 5.0-7.0% Si 28.60 31.40 32.60	W, ton lots delivered \$2.15 (nominal)
Ton lots	Silicomanganese	Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth,
Calcium-Silicon	Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping	Pa. \$1.41 bags, f.o.b. Washington, Pa., Langeloth, Pa. \$1.38
Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Sl, 3.00 max. Fe. Carloads 25.65 Ton lots 27.95	point. Carloads bulk	Simanal, 20% Si, 20% Mn, 20%
Ton lots	Ton lots, packed	allowed per ib. Carload, bulk lump 18.50¢
Cents per lb of alloy, lump, delivered,	Packed, pallets, 3000 lb up to car- loads	Ton lots, packed lump 20.50¢ Less ton lots 21.00¢ Vanadium oxide, 86-89% V ₂ O ₈
packed. 16-20% Ca, 14-18% Mn, 53-59% Sl. Carloads	Silvery Iron (electric furnace)	per pound contained V ₂ O ₈ \$1.38 Zirconium, per lb of alloy
Ton lots	Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross	35-40% f.o.b. freight allowed, carloads, packed 27.25¢
SMZ Cents per pound of alloy, delivered, 60-	ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	12-15%, del'd lump, bulk- carloads 9.25¢
Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ¼ in. x 12 mesh. Ton lots	Silicon Metal	Boron Agents
Less ton lots 22.40	Cents per pound contained Si, lump size, delivered, packed.	Borosil, per lb of alloy del f.o.b. Philo, Ohio, freight allowed, B
Cents Pridge N V freight allowed	Ton lots, Carloads, packed packed 22.90	3-4%, Si 40-45%, per lb con- tained B 2000 lb carload
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% St, 8-11% Mn, packed.	98% Si, 0.75% Fe 24.95 23.65	Bortram, f.o.b. Niagara Falls. Ton lots per pound 45¢
Carload lots 18.45 Ton lots 19.95 Less ton lots 21.20	Silicon Briquets Cents per pound of briquets bulk de-	Corbortum, Ti 15-21%, B 1-2%.
Graphidox No. 4	Cents per pound of briquets, bulk, de- livered, 40% Si, 2 lb Si, briquets. Carloads, bulk	Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%,	Ton lots, packed	Ton lots per pound 14.00¢
Carload packed	Cents per lb contained Si, lump, bulk, carleads, f.o.b. shipping point.	Ferroboron, 17.50 min. B, 1.50 % max. Sl, 0.50 % max. Al, 0.50 % max. C, 1 in. x D, ton lots
Ton lots to carload packed 21.15 Less ton lots	carloads, 1.0.b. shipping point. 50% Si 14.20 75% Si 16.40 65% Si 15.25 85% Si 18.10 90% Si 19.50	
Ferromanganese Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.	90% Si 19.50	10 to 14% B
Producing Point per-lh	Ferrovanadium 50-55% V delivered, per pound, con-	Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over No. 1
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore. 12.25	50-55% V delivered, per pound, contained V, in any quantity. Openhearth	No. 79 50¢
Johnstown, Pa. 12.25 Neville Island, Pa 12.25 Sheridan, Pa. 12.25	Crucible	Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Sl, 3.00% max. C, 2 in. x
Philo, Ohio	Calcium Metal	D, del'd. Ton lots (packed) \$1.46 Less ton lots (packed) 1.57
Add or substract 0.1¢ for each 1 pct Mn above or below base content. Briquets, delivered, 66 pct Mn:	Eastern zone, cents per pound of metal, delivered. Cast Turnings Distilled	Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50%
Carloads, bulk	Ton lots\$2.05 \$2.95 \$3.75 100 to 1999 lb. 2.40 3.30 4.55	max. C. 3.00% max. Fe, balance Ni, del'd less ton lots 2.15
	(Effective July 7, 1958)	

ELECTRICAL POWER EQUIPMENT IN STOCK DC MOTORS

Qu.	H.P.	Make	Тура	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	320
1	3000	New Whee	Ene. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	608	200/300
1	2200	GE	MCF	600	400/500
1	1750	New Elliott	Knc. F.V.	250	175/350
4	1500	New Whae.	Enc. F.V.	525	600
1	1375	G.E.	MCF	415	1300
1	1300	G.E.	MCF-12	300	200/400
1	1200	G.E.	MCF	600	450/688
1	1000	Whae.		566	
1	940	Whee,	QM	250	
2	800	G.E.	MCF	250	
2 2 1	7.50	G.E.	MCF	600	
1	750	G.E.	MCF	600	300/720
1	750	G.E.	MCF	600	120/360
4	600	Whee.		250	275/550
1	500	G.E. B.B.	TLF-2656H	250	2000/8時初
1	500	G.E.	MPC-10	250	
3	450	Whee.		550	415
2	400	G.E.	CY-275		1000/1500
1	300	Cr. Wh.	H-102 B.B.	236	1200
2	300	G.E.	MPC	230	400
2	275 225	G.E. B.B.	TLC-108	250	2000/4000
î	200	G.E. B.B.	B #44 B B	250	1150/3600
1	200	Rel. B.B.	T-564-D.P.	240	1750
1	200	Rel. B.B.	T-663-D.P.	240	
î	200	Whse.	T-064-D.P.	240	850
î	150	Cr. Wh.	CB-207.4	250	850/1200
î	150	Cr. wn.	CMC-65H TLC-74	230 250	
î	150	U.E. D.B.	T-668-D.P.	250	1150/3500
1	150	G.E. B.B.	T-668-D.P.	600	850 250/750
î		C.E. D.D.	CD TLC-50	250	
i	125/150	Now When	CB-210.3	230	300/1290
1	120	Rel RR	1050T	230	375/900
î	125	White.	6K-190	230	450/1200
2	125	Whee.	8K-185	230	350/1000
1	100	G.E.	CDP-115		1750
2	100	Whee.	8K-181	230	450/1000
	75	Rel. B.B.	T-663 D.P.	240	520
1	75/100	Rel. B.B.	T-664-D.P.	240	400/1689
1	75	G.E. B.B.	CD-1286-D.	P.660	850
1	60/75	Rel. B.B.	T-664-D.P.	240	300/1300
1	60/80	Rel. B.B.	T-568-D.P.	240	650/1989
2	60	Rel. B.B.	T-406-D.P.	246	1750/2460
1	50	Rel. B.B.	T-405-D.P.	940	1750
1	40	Rel. B.B.	T-405-D.P.	240	1750
18	40	Rel RR	SEEF THEFY	980	500/1500
1	30/40	Rel. B.B.	T-564-D.P.	240	300/000
	MEDI	CHEV A	DO DECT	-	

S-150 KW, G.E., Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol Illed transformers complete.

2-150 EW, G.E., Ignitron, 245 V. D.C., 220 V. A.C., air cooled transformers with controls.

MG SETS.—3 Ph. 60 Cy.

			-		e y c
Ìυ.	K.W.	Make	RPM	Velts	AC
1	2000	G.E.	514	600	2300/450
2	1750/2100	G.E.	514	250/300	2300/880
1	1500	G.E.	720	600	6600/132
1	1500	G.E.	600	600	2300/415
2	1000	G.E.	720	600	6600/132
2	750	G.E.	720	250/300	6600/133

	2000	G.B.	214	600	2300/4800
2	1750/2100		514	250/300	2300/4500
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	600	600	2300/4150
2	1000	G.E.	720	600	6600/13200
2	750	G.E.	720	250/300	6600/13100
2 1 1	500	Whee.	900	125/250	440
1	500	G.E.	900	125/250	640
1	350	G.B.	900		40/2300/4160
1	300	G.E.	1200	250	1380/4000
1	300	G.E.	1200	250	440/2200
1	200	G.E.	1200	250	#10/550
1	200	Whse.	1200	550	2200
1	200	El. Mhy.	1200	250	2300/4600
1	150	G.E.	1200	275	2350
î	150	Whee.	1200	275	2300
1	150	G.E.	1300	125	440
1	140	Cr. Wh.	690	125/250	0000
1	100	G.E.	1170	250	220/440
1	100	Cr. Wh.	12000	240	140
1 2 1	1.00	Cr.Wh.	1160	525	239/859
1	100	G.E.	1200	250	2400/4100
		(unused)	****		
2	75	Whae.	1200	125	608
1	125	G.E.	1800	250	220/840
1	240	Whse.	900	126	220/849
		TRANS			
0	MVA M		FOR		Weller

Qu.	KVA	Make	Туре	Ph.	Voltages
3	3333	White.	OISC	1	IB800 ± 2300
1	1500	G.E. suto	HT	8	4000/4200/4400
8	1000	O.E.	OA/FA	1	ISSO0 r 230/480
2	750	O.E.	Pyranol	3	4800x85/55-253/165
- 8	300	Kuhl	OISC	1	18200 x 6606
3	333	O.E.	OISC	1	13200 x 2530/4386Y
8	150	G.E.	OISC	1	23800x2300/4006Y
- 8	188	Whae,	SK	1	4600x450/230/II5
2	333	G.E.	OISC	3	2400/4160Y x 600

CRANE & MILL MOTORS

		230	V., D.C	
Qu.	H.P.	Make	RPM	Туре
14	12/15	Whee.	700/600	MCA-30, Series
1 3	20	Whse.	975	K-5, Series
3	23	G.E.	650	MDS-408-
				AE-2 sh.
2112221	25	G.E.	725	CO-1808, Series
1	35	Whee.	480	CK-9 Comp. S.B.
1	35	Whee.	480	CK-9 Sh. R.B.
1	45	Whee.	600	CK-9 Comp. 8.B.
8	50	G.E.	650	COM-1830 Comp.
8	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whee,	600	CK-9 Comp. B.B.
1	50	G.E.	550	MD-412AE 2
				Comp. R.B.
1	50	Cr. Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832
				Series S.B.
- 6	190/140	Whse.	500/415	MC-90
				Series B. B.
		RE-N	U-BILT	By

BELYEA COMPANY, Inc. 47 Howell St. Jersey City 6, N. J. Tel. OLdfield 3-3334

THE CLEARING HOUSE

Why Detroit Market Remains Slow

Used machinery buyers there, although showing some interest in equipment, are still reluctant to make purchases.

Dealers are often more active than customers, buying up wellpriced, late-model tools for inventories.

· Prospective buyers of used machinery at Detroit are showing interest in the market, but are still hesitant in committing themselves to purchases. On the strength of inquiries, dealers are hoping for an early fall pickup.

Seasonal upturn in the construction industry has helped sales of fabricating tools to such firms as window and door manufacturers, although even this business trails year ago levels.

Most Wanted List-Equipment in greatest demand, however, is usually in shortest supply. This includes bending rolls, roll formers, shears, press brakes, iron workers and similar machines. Some demand exists for other equipment which also is traditionally tight, such as cold headers.

But Detroit's usual volume items -toolroom and production equipment-still show no signs of a summer upturn. Equipment in these categories is plentiful and late model.

Dealer Stocks High-One seller estimated every dealer has more high quality machinery available than at any time in the past. Particularly good buys are available in production equipment such as lathes and milling machines.

There are several reasons for this

abundance of seemingly unwanted equipment. Coupled with government tool disposal programs, Ford, Chrysler and General Motors have all been offering equipment for sale as they change operations in preparation for new model automobiles and new ways of making them.

Much of this equipment is good. late-model machinery and is being offered at reasonable prices, according to dealers. Many say they are buying as much of this equipment as they are able, but there are limitations to this practice.

Cutoff Ahead-As one dealer says: "Our problem is that we are buying more machinery than we are selling, but this is going to have to stop sometime. We're going to either run out of money or space for any extended buying spree."

Another dealer indicates prices are generally down 25 pct from one or two years ago. Items in short supply or for which there is a fairly strong demand still being 60 to 70 pct of their cost when new. But slow moving equipment sells at only 35 to 45 pct of the replacement cost, depending on age.

Customers Wait-Where a few years ago companies would buy equipment in anticipation of a job, they now prefer to wait until they have it before committing themselves. For example, nearly two months ago a dealer quoted a price for a Bullard Multi-Au-Matic. Just the other day the customer called to inquire if it was still available.

Contrary to past practice, the rebuilding business has also failed to show signs of life.

CONSIDER GOOD USED EQUIPMENT

BALER
Model #122-PX-60 Legemann, Bailing Chamber 60

X | 4 x | 8"
BENDER & STRAIGHTENER
Pels Type JH All Steel Bender & Straightener for
Beams. Channels, Angles, Toes—Angles Equal &
Tees 8 x 8 x 1 | 8"
BENDING ROLLS

NULLS

Sa Bertsch Initial Type

Sa Bertsch Initial Type

Sa Bertsch Initial Type

Sa Bansone Pyramid Type

Sa Bansone Pyramid Type

Sa Bertsch Initial Type—NEW

on Pacific Hydraulic 10' n

Sa Banson Pacific Hydraulic 10' n

13' x 3' 16" Bertsch Initial Type—NEW

FRAKES—PRESS TYPE

500 ton Pacific Hydraulic 10' Bet. Housings
10' x 3' x 12' x x 19' Hydraulic—NEW

CRANES—OVERHEAD ELECTRIC TRAVELING
3 ton JAH
56' Span 220'/3'/80
5 ton Shepard Niles
70' Span 220'/3'/80
10 ton Pach
10 ton Shaw
10' Span 220 Voit D.C.
10 ton Shaw
120' Span 220 Voit D.C.
11 ton Shaw
120' Span 220 Voit D.C.
15 ton Northern
15 ton Shepard Niles
16' Span 220 Voit D.C.
17 ton Shepard Niles
17' Span 220 Voit D.C.
18 ton Shepard Niles
17' Span 220 Voit D.C.
19 ton Shaw
1900 Ib. Draw Bench, 20 ft. Pull—New 1956
FORGING MACHINES
GRING ACHINES
GRING A

GRINDER
No. 2 Cincinnati Centerless Grinder—NEW 1956
HAMMERS—BOARD DROP—STEAM DROP—STEAM
FORGING 800 lb. to 12,000 lb. incl.

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HEADERS

60" Actna Standard, 17 Rolls 4%" dis 2 Rail & 2 Side Heads

42" x 42" x 14' Ingersoll 2 Hail & 2 Side Heads RESSES-HYORAULIC 600 ton HPM Fastraverse, Bed 35" x 36" 600 ton Elmes 36" Stroke, 48 x 45" Bet. Cols. 1000 ton HPM Fastraverse, Bed 48" x 74", 36" Stroke 1500 ton Mesta Steam Hydr, Forging Press PRESSES-

1000 ton HPM Fastraverse, itsel to 1500 ton Mesta Steam Hydr. Forging Press PRESSES = STRAIGHT SIDE 180 ton Hamilton #847, 12" Str. 35\(^{\mu}\) Bet, Upa. 200 ton Clearing Fi200-42, Stroke 30", Bed 44" x 38"

250 ton Bliss RI 7½ Str. Bistr. 33" x 39"
PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C: Arch Jaw, Capy, %," x %,"
Cleveland Style EF, Arch Jaw, Capy. 1½," x 1"
ROLL—CORRUGATING
#3 Stamoco, Capacity 16 Ga, Material, 12' long, 36"

\$40A Quickwork Whiting, 48" Throat, 1/2" Capy.

--NEW
ROLLING MILLS
6" x 1" Three Stand Wire, Rolling Mill Complete
with Pay Off & Recoller
6" x 5" Torrington Flat Wire Mill Line
8" x 10" Single Stand Two High
10" x 14" Single Stand Two High
12" x 12" Single Stand Two High
12" x 12" Single Stand Two High

12" x 16" Single Stand Two High 16" x 24" Single Stand Two High 20" x 36" Single Stand Two High ROLL—FORMING and Custom Built, 2½ Shaft, will take 36" wide

Aun Berisch, Seven Rolls 9" Dis.
T2" Niles 7 Rolls 9" Dis.
T2" Niles 7 Rolls 9" Dis. Motor Driven
SHEAR-ALLIGATOR
No. 4 Mesta RH LK, Capacity 2" x 12"
SHEAR-ANGLE
6 X 6 X % Hilles & Jones
SHEAR LINE
35" X 902 G. X

020 Ga. Hallden Shear Line -ROTARY Throat, %" Capacity-LATE

MEAN TO Kling, 48' Throat, % Capacia; MEARS—SQUARING 6' x 14 Ga. Edwards, Motor Drive—LATE 10' x ½ "Cincinnati 10' x ½ "Nagara 14 x 3/16" Cincinnati #1814

14 x 3/16" Cincinnatt #1814

SLITTERS
SLITERS

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RAILWAY CARS All Types SERVICE-TESTED

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SIDE DUMP CARS

6-Air-operated, Austin-Western 30-Cubic Yard 3 Drop and 3 Lift Deer Type

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and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon Cleaned and Tested

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FREIGHT CAR REPAIR HOT STRIP For All Types of Cars LOCOMOTIVES Diesel, Steam, Gasoline

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ALL CONTROLS RUNOUT TABLE TIMKEN BEARINGS
 ROUGHING STANDS FULL REVERSING — 4 HI ARE STRAIGHT AWAY

Now running 36,000 tens per month

SUITABLE FOR BRASS, ALUMINUM, COPPER AS WELL AS STAINLESS, SILICON OR STEEL PRODUCTION.

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MISC. STEEL MILL EQUIPMENT
UNITED ENGINEERING RECOILER, 40,000#
CAP. 68" WIDTH
YODER UNCOILER, 30,000# CAP. 60" WIDTH
ROLLER LEVELLERS—ALL SIZES
ALLIANCE STEEL MILL TROLLEY
STEEL MILL CRANES
PLATE LEVELLERS
PLATE LEVELLERS

TANDEM MILL

Mesta, Five stand, Four Hi, 800 H.P. each stand. Complete with all electric, etc. Beautiful condition. Has been running 100 per cent reduction by .072 to .090 at 2000 F.P.M. Roll face 42 inches.

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ARNOLD HUGHES COMPANY

2745 PENOBSCOT BLDG.

DETROIT 26. MICHIGAN

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GET CASH NOW AVAILABLE: NEW MOTORS Write, write or phone or phone AJAX ELECTRIC MOTOR CORP. gallest! Ling Strange Phone LD 132

1/2, 11/2 Buffalo Forge Ironworkers.
24' x 28' Henday Geored Head Lathe, M.D.
22' 5' Centers.
3' x 11', 3' x 13'', 5' x 15'' Cinc. Bickferd
Super Service Radial Drills.
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No. 8, No. 11 Buffalo Forge Armor Plate Fower
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FALK MACHINERY COMPANY
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MOTORS . GENERATORS TRANSFORMERS NEW . REBUILT WORLD'S LARGEST INVENTORY ELECTRIC EQUIPMENT CO. on Collect GL 3-6783 O. BOX 51 ROCHESTER, NEW YORK

I—AUTOMATIC COOLING BED FOR BARS up to 2" dia. rosalists of run-in table, caseede section. 200 ft. long section, ruseout table, with all electrics, 200 ft. long section, ruseout table, with all electrics, 200 ft. long section, ruseout table, with 2500 HP D.C. meter generator, etc. 25" & 42" x 60" HOT STRIP MILL, 4-high, reversing, with 2500 HP D.C. meter generator, etc. 25" & 42" x 60" HOT STRIP MILL, 4-high. 1-38" with 100 STAND, 2-high, mediera design. 1-30" x 10" 2-High COLD MILL.
1-8" x 10" 2" 2-High COLD MILL.
1-16" x 22" COLD MILL, 2-high.
1-12" x 12" COLD MILL, 2-high.
1-12" x 12" COLD MILL, 2-high.
1-12" x 10" 2-High COLD MILL, combination pinion stand and gear set, sxtra forged steel redistant deging rolls.
1-2" x 10" COLD MILL including uncoller, recoller and edging rolls.

and edging rolls.
2-28" 3-HIGH ROLL STANDS with inlet, outlet and intermediate tables. Will produce 4" og. billets from 8" sq. blooms in 6 passes.

1--12" MERCHANT BAR MILL with 18" roughing mill and heating furnace.

1--6" BAR MILL, 3-bigh.

1--Waterbury Farrel 6 head tandem rod mill for cold rolling with

2-MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.

I-UNCOILER, drag type, 60" maximum width, for

cold mill.

34" x 192" ROLL GRINDER.

-ROLL GRINDER: aspacity rolls 46" dia. x 172"

65-TON ELECTRIC MELTING FURNACES. TOP
CHARGE: with all electrical and mechanical
quipment, including 15,000 KVA and 13,333 RVA 2-60-TON ELECTRIC HOLDING FURNACES, each

with 7500 KVA transformer.
2-PACK FURNACES for hot sheet mills, 62" x 60', iteuble chamber.

HOT METAL TRANSFER CARS, 2-90-TON

2-00-TON HOT METAL TRANSFER CARS, Treadwell.

3-6LAG LADLE TRANSFER CARS, Blaw-Kwex.

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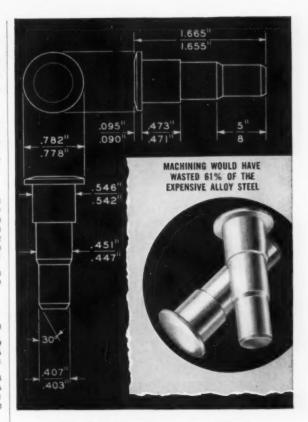
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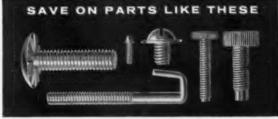
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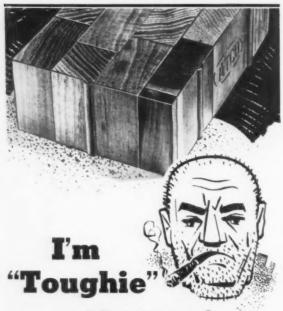
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